



**Trinity College Dublin**

Coláiste na Tríonóide, Baile Átha Cliath

The University of Dublin

# **Exploring how multimorbidity care is managed for an older Irish patient population within clinician networks: Preliminary findings from an SNA survey**

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# Background

## **Multimorbidity Definition – *Van Akker 1996***

### **Studies focusing on managing care for people with multimorbidity show:**

- Health Service Utilisation: Long-term Use; Multiple Services at Same Time; Community Dwelling Ageing Cohort
- Health Service Integration: Difficulty in continuity of care due to “Disease Silos”
- Complexity of Care Management: 43% of Multimorbidity Complexity came from challenges associated with coordinating care as opposed to clinical complexity. (Blay, 2016)

### **Type of Multimorbidity Care Being Promoted**

- Self-managed Care with help from Community & Family Support
- Seamless Continuity of Care Between Primary & Secondary Care
- More Care to Take Place in the Community

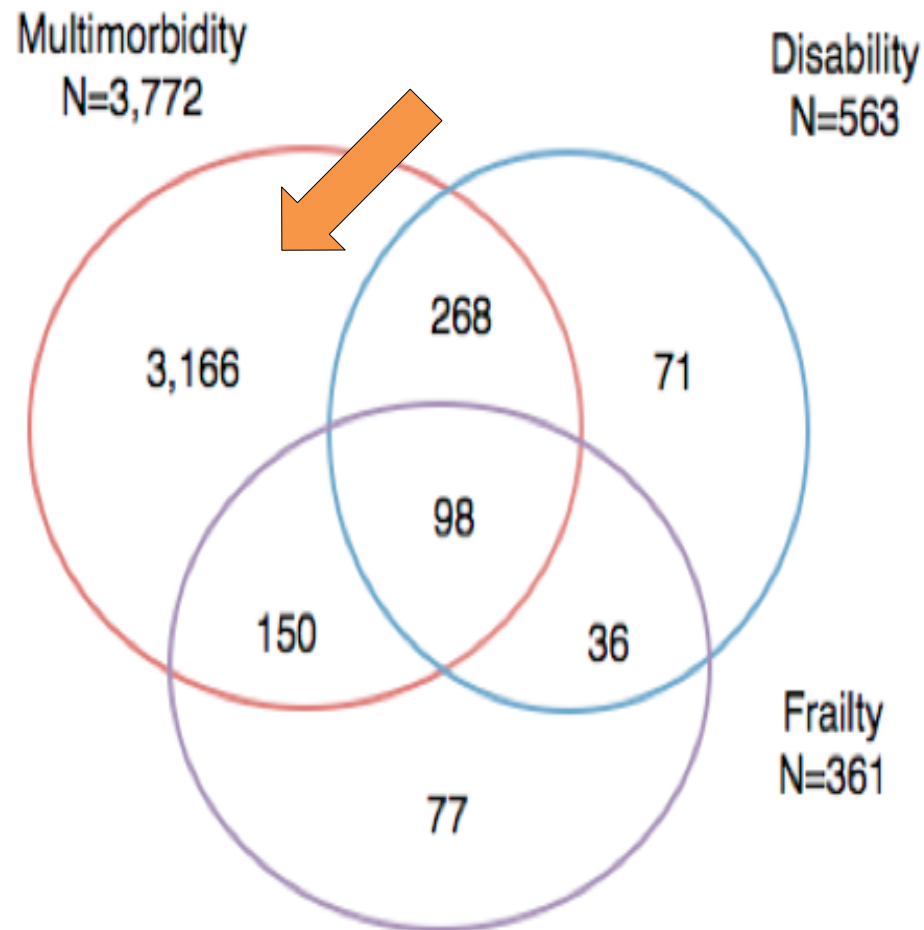
# SNA Study Aims

## **Primary Objective:**

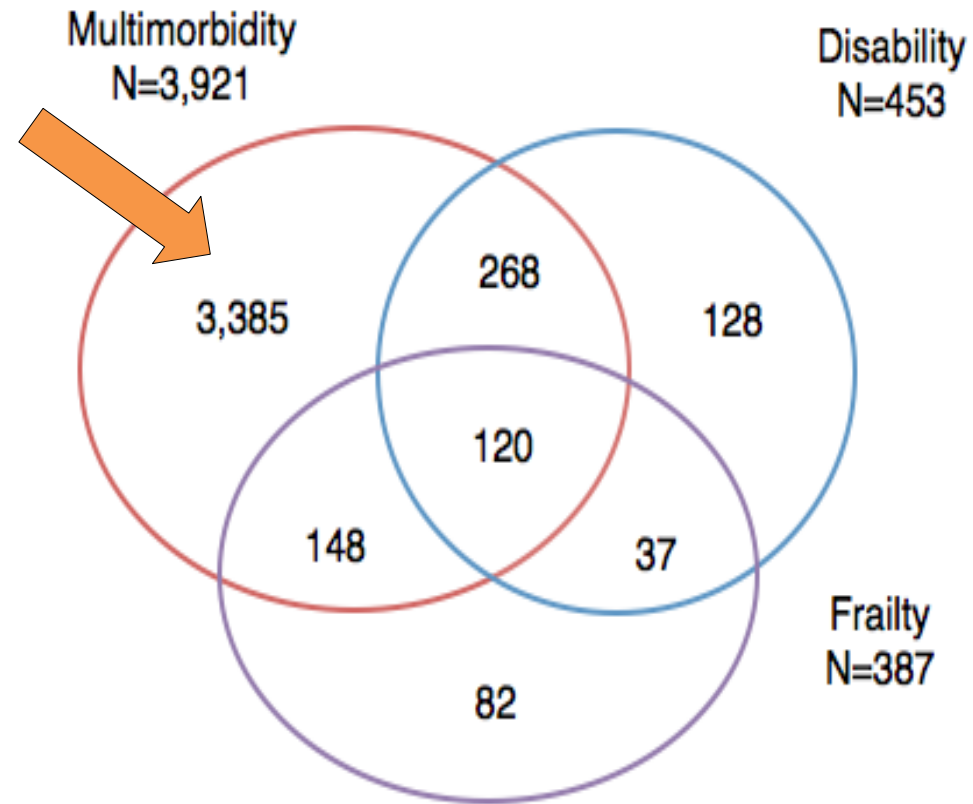
**To explore the complexity of multimorbidity service coordination by exploring patterns for both clinician interaction networks and patient support networks**

# Preliminary Research on Multimorbid Population in Irish Ageing Population (TILDA Longitudinal Dataset)

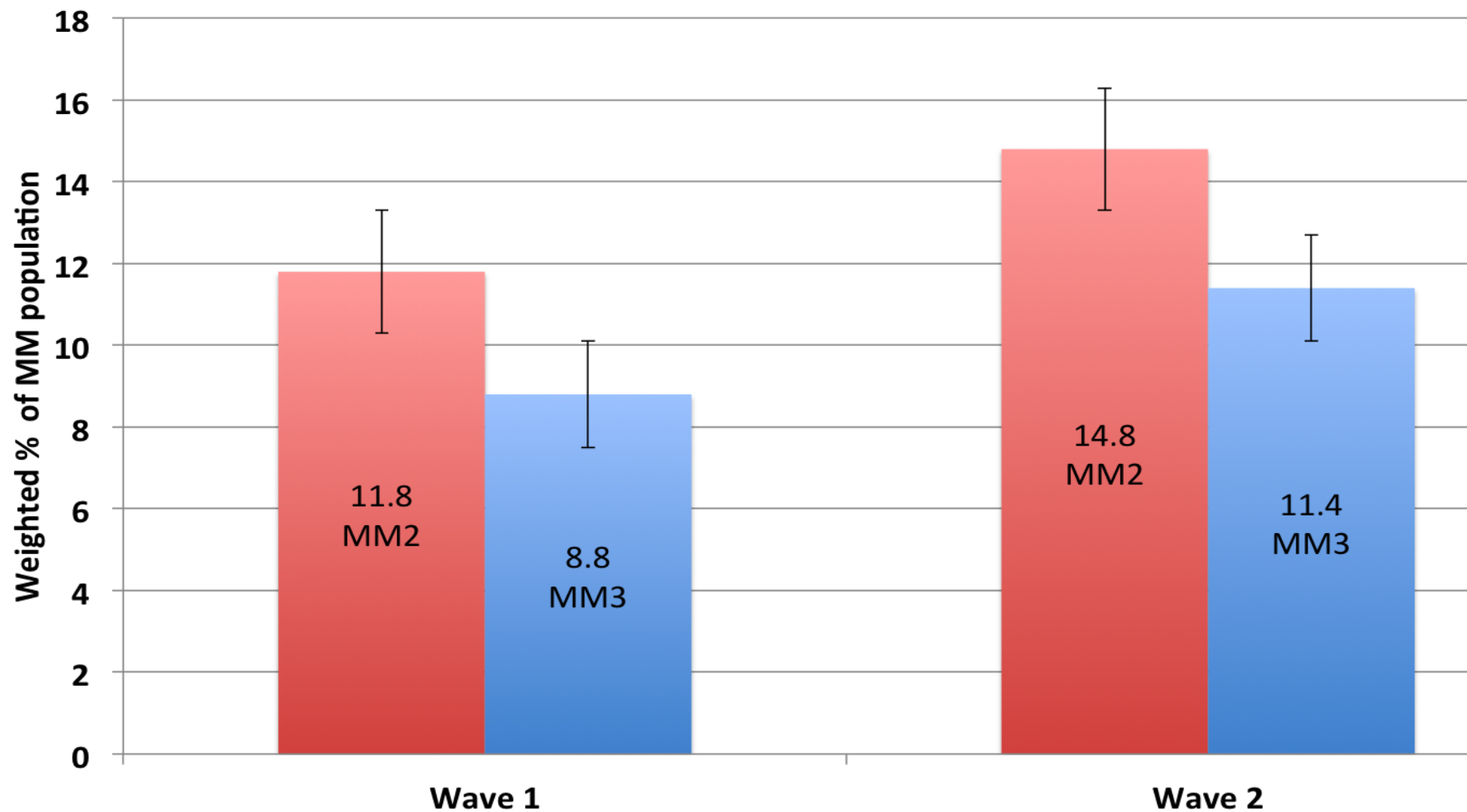
## Wave 1



## Wave 2



# Prevalence of Rheumatoid Arthritis (Autoimmune Disease) Within MM2 & MM3 Populations



MM2 = Cohort with 2 Conditions (RA & Another); MM3 = Cohort with 3 Conditions (RA & 2 Others)

# Brief overview of the social network data across all previous SNA in Irish Healthcare studies...

## Questionnaire data collection

- Roster , free-choice design
- Position generators at the level of professional groups rather than individual names at the behest of ethics committees (Identification key of individual participants constructed by the researcher from questionnaire codes)
- Attribute data collected on individual participants

## Affiliation and Interaction networks

- Set of individual actors from different professional groups / care settings: focus on interdisciplinary interaction as opposed to interpersonal interaction per se
- Relations measured across a range of multidisciplinary team /cross-settings activities (i.e. workflow, interactional and communicational relations)
- Treated mainly as one-mode, single-relation datasets [i.e. each type of relation analysed individually using one-mode analysis (Wasserman and Faust, 1994)]

## Data Types:

- Aileen and Deirdre's studies: dichotomous, non-directional data (data symmetricized to deal with non-confirmed relations, cf. Waldstrom, 2003)
- Breedge's study: dichotomous, non-directional and directional (referral sources) data
- Peace's study: ego-network data

## Network-level and node-level statistics presented (UCINET);

## Visualisations (graph-theoretic layout based on proximities) presented (Netdraw)

# Research Design Comparisons of SNA in Irish Healthcare Research on clinician and support networks in last decade 2007-2017

(Lee et al, 2013; Lee et al, 2015)

|                           | Study A<br>(Ackermann, 2007)                                                        | Study B<br>(Murphy, 2008)                                                                                                                         | Study C<br>(O'Doherty, 2008)                               | Study D<br>(Finn, 2009)                                                                   | Study E<br>(Ezumezu, 2013)                                                                                             | Orla et al, 2017                                                                        |
|---------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Instrument<br>(s)         | Self-completed Survey                                                               | Self-completed Survey ;<br>Semi-structured Interviews                                                                                             | Self-completed Survey;<br>Semi-structured Interviews       | Self-completed Survey;<br>Semi-structured Interviews &<br>Focus Groups                    | Researcher-administered Survey;<br>Focus Group                                                                         | Self-completed Survey (clinicians);<br>Researcher-administered Survey (patients)        |
| Sampling                  | Respondent-Driven Sampling                                                          | Whole-Network Sampling                                                                                                                            | Whole-Network Sampling                                     | Whole-Network Sampling                                                                    | Ego Sampling                                                                                                           | Whole-Network Sampling                                                                  |
| Social Network Generators | Name and position generators                                                        | Position Generators Only                                                                                                                          | Name and Position Generators                               | Position Generators Only                                                                  | Position Generators Only                                                                                               | Position Generators Only                                                                |
| Site(s)                   | Single hospital site in Dublin                                                      | Single HSE region comprising 7 administrative areas, each with own mental health management team                                                  | Single Educational Site in Dublin                          | Single Hospital Site and Community Professionals from its Catchment Population in Dublin  | Single In-Patient Ward of Treatment Centre and its Catchment Population                                                | Single Hospital Site                                                                    |
| Team(s)                   | Single "hidden" Informal MDT caring for patients with acute, neurological dysphagia | 6 x MHMTs representing 3 team archetypes: <ul style="list-style-type: none"> <li>• Tripartite</li> <li>• Quasi-MDT</li> <li>• Full MDT</li> </ul> | Single Formalised MDT of HSCPs; Informal MDT with teachers | Formalised MDTs in Hospital; Formalised MDT in community; Informal Cross-Settings Network | Formalised MDT in Treatment Centre; Formalised MDT in Community; Very Limited Interaction between Centre and Community | Formalised MDT within for Single Disease Pathway; Informal MDT for Multiforbid Patients |

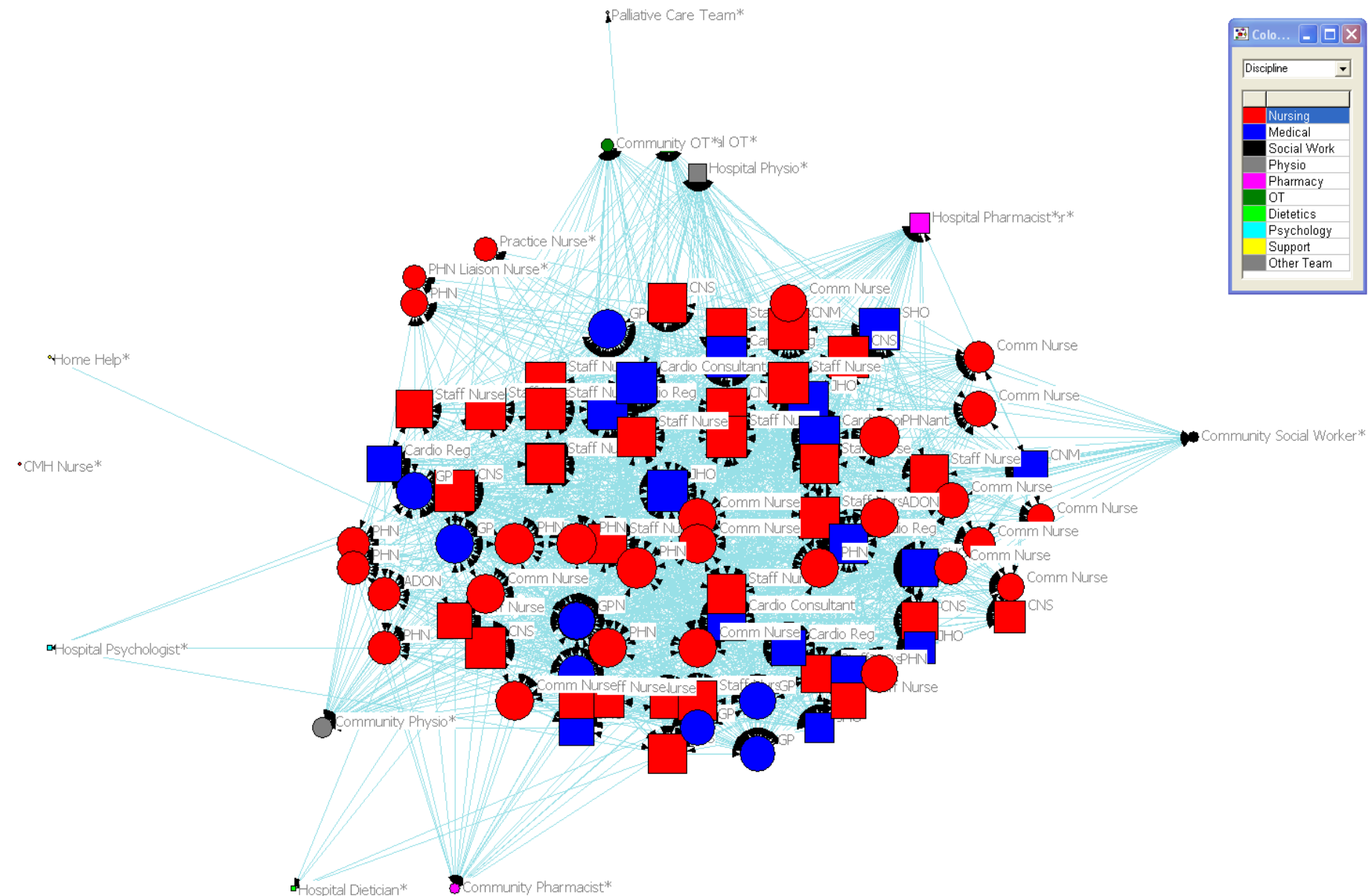
# SNA Survey Designs in Irish Health and Social Care Settings...

|                  | Study A<br>(Ackermann, 2007)                                                                                                                                             | Study B<br>(Murphy, 2008)                                                                                                                                                                                                                                                                              | Study C<br>(O'Doherty, 2008)                                                                                                                | Study D<br>(Finn, 2009)                                                                                                                                                                 | Study E<br>(Ezumezu, 2013)                                                                                          |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Survey Section A | Formal Networks:<br>Ideal and Current Membership of Multidisciplinary Team                                                                                               | Formal Networks:<br>Ideal and Current Membership of Multidisciplinary Team                                                                                                                                                                                                                             | Formal Networks:<br>Current Membership of Multidisciplinary Team                                                                            | Formal Networks:<br>Ideal and Current Membership of Multidisciplinary Team                                                                                                              | Formal Networks:<br>Current and Ideal Clinicians to be involved in Care                                             |
| Survey Section B | Informal Networks: <ul style="list-style-type: none"> <li>• Information Exchange;</li> <li>• Joint Working;</li> <li>• Problem-solving;</li> <li>• Friendship</li> </ul> | Informal Networks: <ul style="list-style-type: none"> <li>• Verbal Communication;</li> <li>• Written Communication;</li> <li>• Strategic Planning;</li> <li>• Service Development;</li> <li>• Clinical Governance;</li> <li>• Information-sharing;</li> <li>• Day-to-Day Service Management</li> </ul> | Informal Networks: <ul style="list-style-type: none"> <li>• Planning;</li> <li>• Problem-solving;</li> <li>• Information-sharing</li> </ul> | Informal Networks: <ul style="list-style-type: none"> <li>• Team meeting attendance;</li> <li>• Referral Sources within Setting;</li> <li>• Referral Sources outside Setting</li> </ul> | Informal Networks:<br>Peer, Family and Community Support Networks within Treatment Centre and in Community Settings |
| Survey Section C | Experiences of and Attitudes towards Multidisciplinary Teamwork                                                                                                          | Experiences of and Attitudes towards Multidisciplinary Teamwork                                                                                                                                                                                                                                        | Experiences of and Attitudes towards Multidisciplinary Teamwork                                                                             | Experiences of and Attitudes towards Multidisciplinary Teamwork                                                                                                                         | Experiences of and <u>Preferences</u> for Seeking Support from Particular Carers                                    |
| Survey Section D | Professional Attributes / Standard Demographics                                                                                                                          | Professional Attributes / Standard Demographics                                                                                                                                                                                                                                                        | Professional Attributes / Standard Demographics                                                                                             | Professional Attributes / Standard Demographics                                                                                                                                         | Standard Demographics                                                                                               |



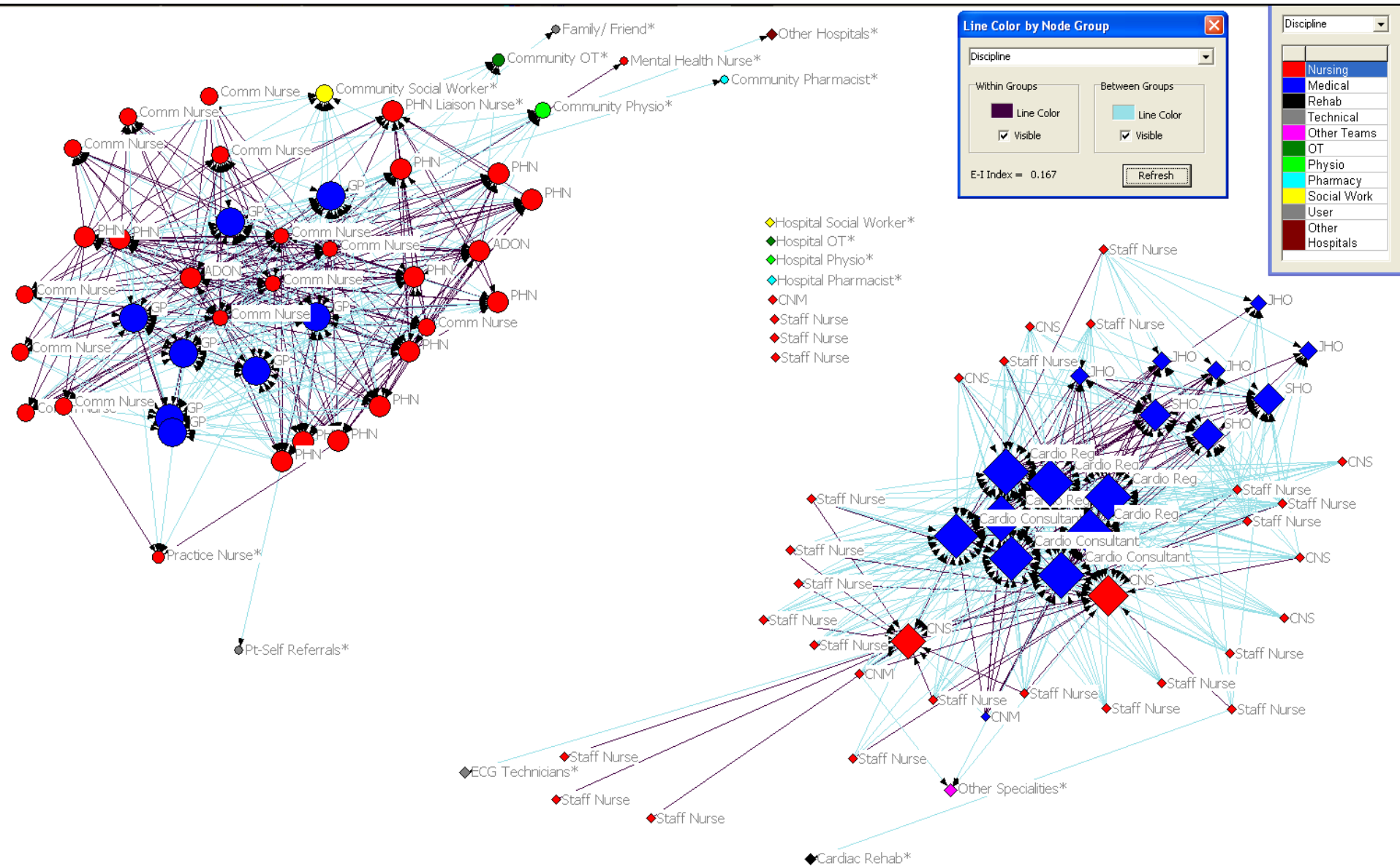
# Ideal MDT Membership across 1e and 2e Care

(Only Inter-Professional Ties shown; Node Size=Degree Centrality; Node Shape=Setting)



# Referral Sources Within Settings

(Black Ties=Intra-prof; Blue Ties=Inter-prof; Node Colour=Discipline;  
Node Size=In-Degree Centrality; Node Shape=Setting)



# QAP correlations across all 7 managerial functions' informal networks... (Examples of Full MDT & Quasi-MDT)

| Team 3                           | Verbal Communication | Written Communication | Strategic Planning | Service Development | Clinical Governance | Day To Day Management Of Service | Information Sharing |
|----------------------------------|----------------------|-----------------------|--------------------|---------------------|---------------------|----------------------------------|---------------------|
| Verbal Communication             | 1.000                | 0.676**               | 0.717**            | 0.727**             | <b>0.536**</b>      | <b>0.469**</b>                   | <b>0.798**</b>      |
| Written Communication            | 0.676**              | 1.000                 | 0.626**            | 0.718**             | 0.708**             | 0.555**                          | <b>0.539**</b>      |
| Strategic Planning               | 0.717**              | 0.626**               | 1.000              | <b>0.866**</b>      | 0.708**             | <b>0.531**</b>                   | 0.677**             |
| Service Development              | 0.727**              | 0.718**               | <b>0.866**</b>     | 1.000               | 0.669**             | <b>0.525**</b>                   | 0.605**             |
| Clinical Governance              | <b>0.536**</b>       | 0.708**               | 0.708**            | 0.669**             | 1.000               | 0.702**                          | 0.621**             |
| Day To Day Management Of Service | <b>0.469**</b>       | 0.555**               | <b>0.531**</b>     | <b>0.525**</b>      | 0.702**             | 1.000                            | <b>0.514**</b>      |
| Information Sharing              | <b>0.798**</b>       | <b>0.539**</b>        | 0.677**            | 0.605**             | 0.621**             | <b>0.514**</b>                   | 1.000               |

(\*\* indicates p<0.01; \* indicates p<0.05; Pearson's correlations above 0.75 highlighted in **bold**; those below 0.55 highlighted in **red**.)

| Team 6                           | Verbal Communication | Written Communication | Strategic Planning | Service Development | Clinical Governance | Day To Day Management Of Service | Information Sharing |
|----------------------------------|----------------------|-----------------------|--------------------|---------------------|---------------------|----------------------------------|---------------------|
| Verbal Communication             | 1.000                | <b>0.802**</b>        | <b>0.904**</b>     | <b>0.802**</b>      | <b>0.518*</b>       | 0.728**                          | <b>0.810**</b>      |
| Written Communication            | <b>0.802**</b>       | 1.000                 | <b>0.904**</b>     | <b>0.802**</b>      | 0.714**             | 0.631**                          | 0.712**             |
| Strategic Planning               | <b>0.904**</b>       | <b>0.904**</b>        | 1.000              | <b>0.904**</b>      | 0.645**             | 0.646**                          | 0.720**             |
| Service Development              | <b>0.802**</b>       | <b>0.802**</b>        | <b>0.904**</b>     | 1.000               | 0.714**             | <b>0.534*</b>                    | 0.615*              |
| Clinical Governance              | <b>0.518*</b>        | 0.714**               | 0.645**            | 0.714**             | 1.000               | 0.674**                          | 0.594*              |
| Day To Day Management Of Service | 0.728**              | 0.631**               | 0.646**            | <b>0.534*</b>       | 0.674**             | 1.000                            | <b>0.909**</b>      |
| Information Sharing              | <b>0.810**</b>       | 0.712**               | 0.720**            | 0.615*              | 0.594*              | <b>0.909**</b>                   | 1.000               |

# SNA Study Design – Clinicians' Networks

## Phase 1 Clinician Networks:

### Target Population – Hospital-based Staff:

- Medical and Nursing core disciplines (Ackermann, 2007; Finn, 2009; Ezumezu, 2013)
- Healthcare & Social Care Professionals (Ackermann, 2007; O'Doherty, 2008; Murphy, 2008; Ezumezu, 2013)
- Support Staff e.g. Clerical, Healthcare Assistants, Porters

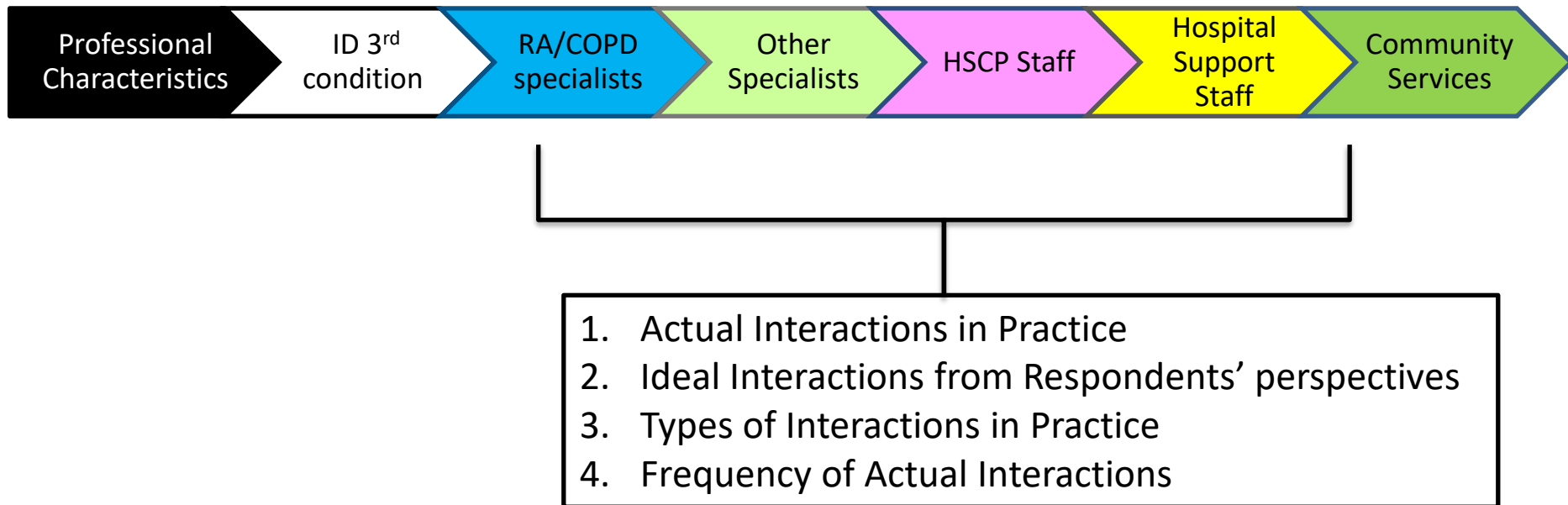
### ***Inclusion/Exclusion Criteria***

- *Working in one Irish teaching hospital*
- *Involved with Caring for Patients aged 50 or over living in the Community with*
  - *TWO CONDITIONS (Rheumatoid Arthritis + COPD)*
  - *THREE CONDITIONS (Rheumatoid Arthritis, COPD + 3<sup>RD</sup> CONDITION Identified by participant)*

# SURVEY DESIGN

Based on Irish surveys that collected sociocentric data focused on interaction patterns amongst multidisciplinary healthcare professionals and support staff:

## Survey Structure:



# Participants' Profile...

| Attribute                                                           | Target Population                                                                                                                 | Profile Range                                                |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Job Role                                                            | RA Department (OPD focus)<br>Non-RA Services Caring for<br>Complex RA patients                                                    | 2 HSCP, 3 Doctors,<br>2 Nurses,<br>1 Support Staff           |
| Length in Role                                                      | No predefined range                                                                                                               | Ranging from 1-10 Years                                      |
| Chosen 3 <sup>rd</sup> Condition<br>Encountered in last 3<br>years  | All TILDA-identified<br>Multimorbid Condition Sets<br>associated with RA; plus<br>Any Other Condition specified<br>by respondents | Other Arthritic Conditions<br>Cardiac<br>Physical Disability |
| Encountering RA +<br>COPD                                           | Daily- Every 3 months                                                                                                             |                                                              |
| Encountering RA,<br>COPD + 3 <sup>rd</sup> identified<br>conditions | From Don't Know to Weekly                                                                                                         |                                                              |

# Preliminary Analysis...

**Actual Vs. Ideal Interactions**

**Two Conditions vs. Three Conditions**

**Representation of Disciplines for Particular Types of Interactions**

**Frequency of Interactions**

**... nodes represent all possible positions (Position ID) identified by respondents, colour-coded by discipline categories (Discipline ID).**

**... links represent participants' perceived interactions with other positions to explore differences in cognitive networks amongst current participants (i.e. not behavioural ties due to the fact that we do not currently have full coverage of the target population to offer full description of the clinician networks)**

# Two Conditions: RA + COPD

Red Lines = Actual

Blue Lines = Ideal

Square = Hospital

Triangle = Community



Doctor



Nurse



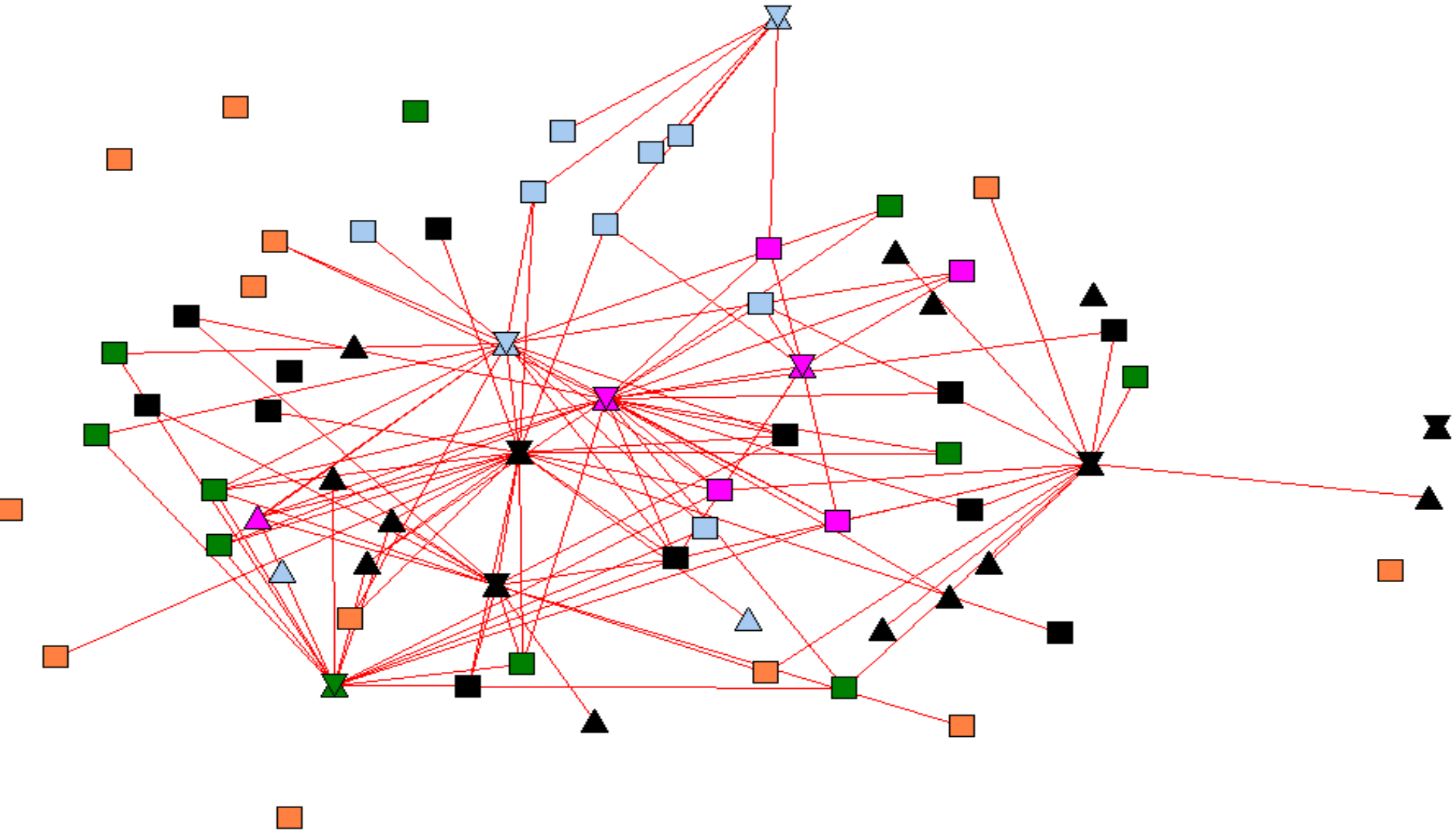
HSCP



Support Staff



Other Specialist Services



# Two Conditions: RA + COPD

Red Lines = Actual

Blue Lines = Ideal

Square = Hospital



Doctor



Nurse



HSCP

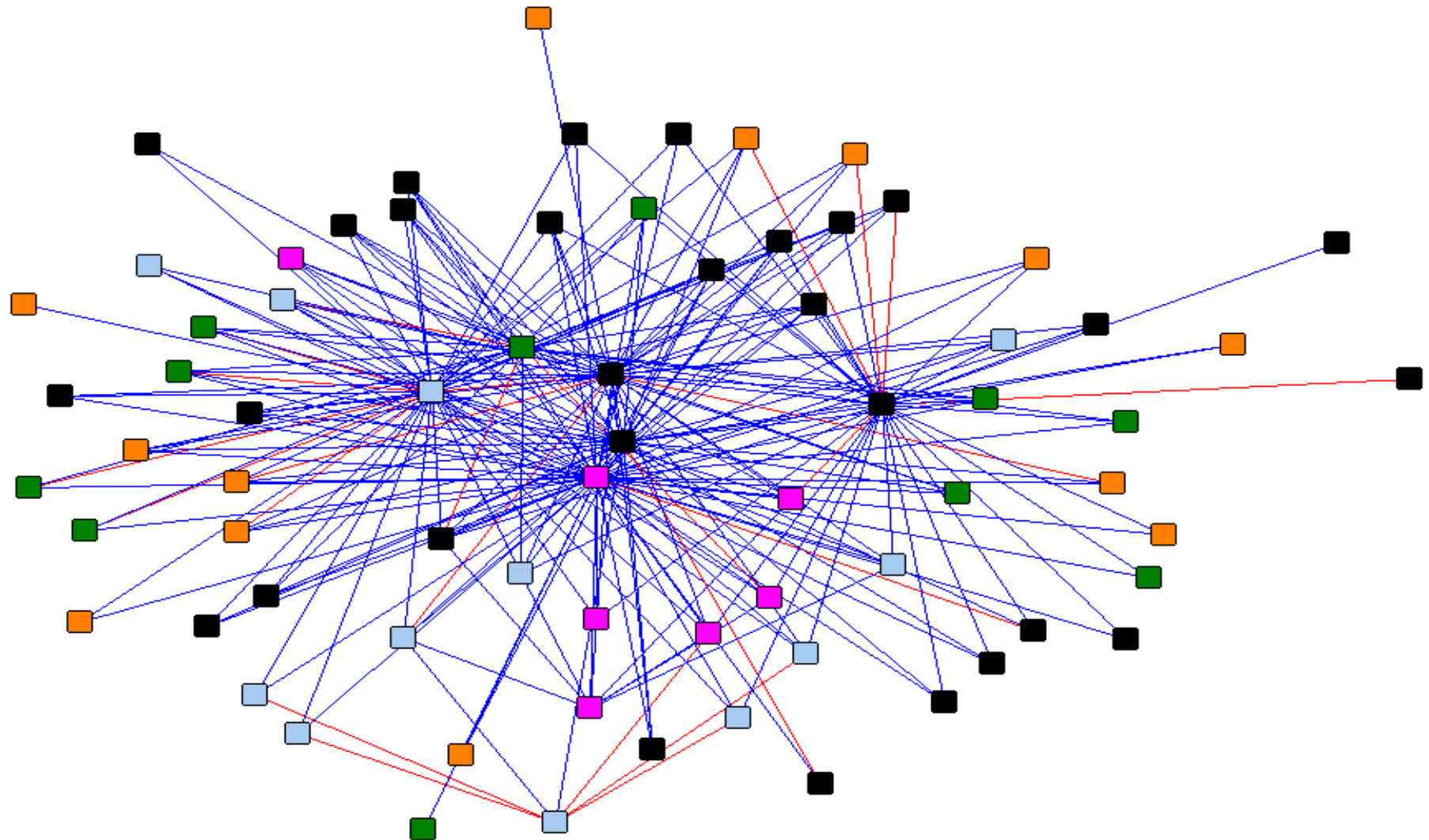


Support Staff

Triangle = Community



Other Specialist Services



# Three Conditions: RA, COPD + 3rd

Red Lines = Actual

Blue Lines = Ideal

Square = Hospital

Triangle = Community



Doctor



Nurse



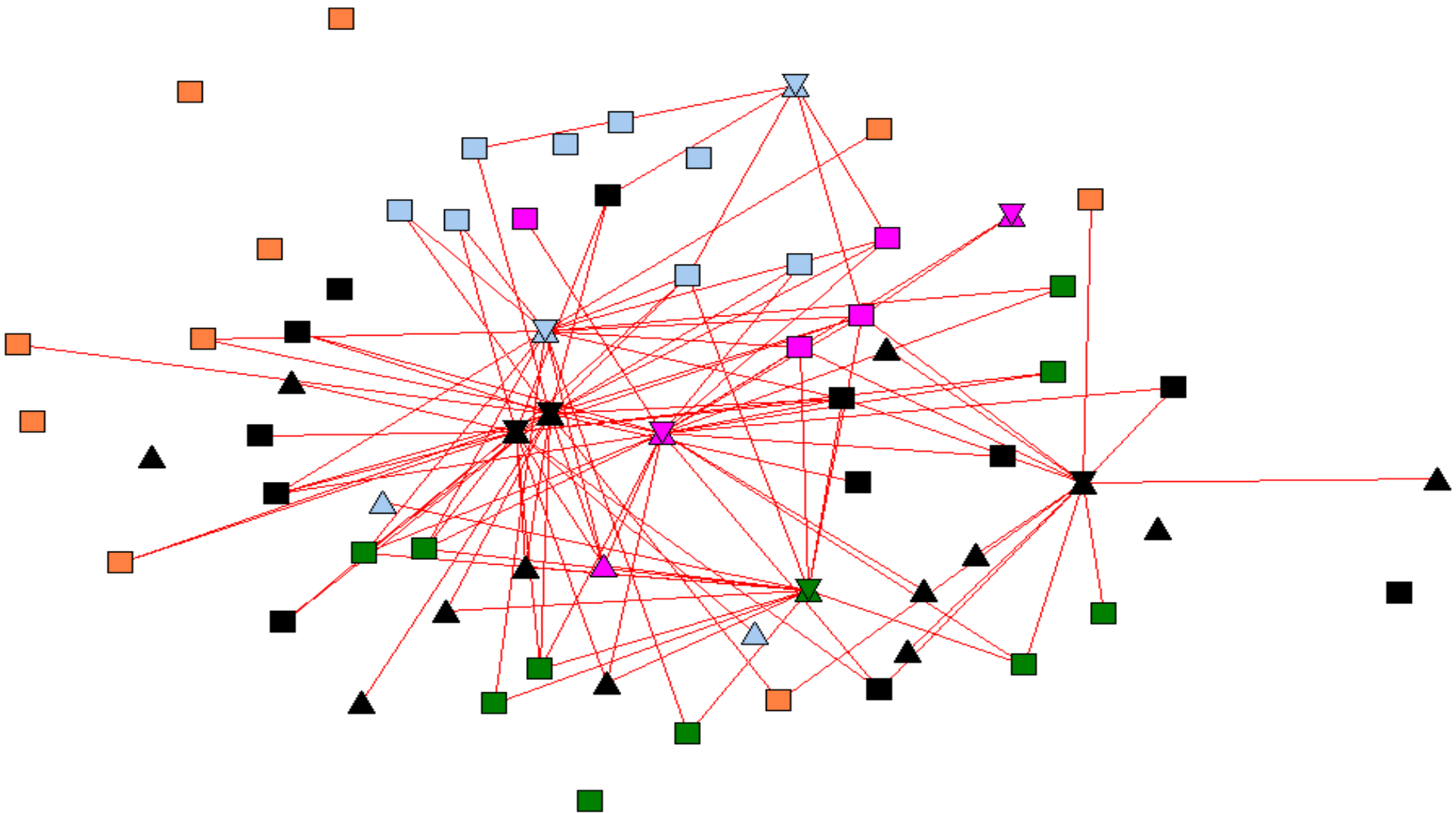
HSCP



Support Staff



Other Specialist Services



# Three Conditions: RA, COPD + 3rd

Red Lines = Actual

Blue Lines = Ideal

Square = Hospital

Triangle = Community



Doctor



Nurse



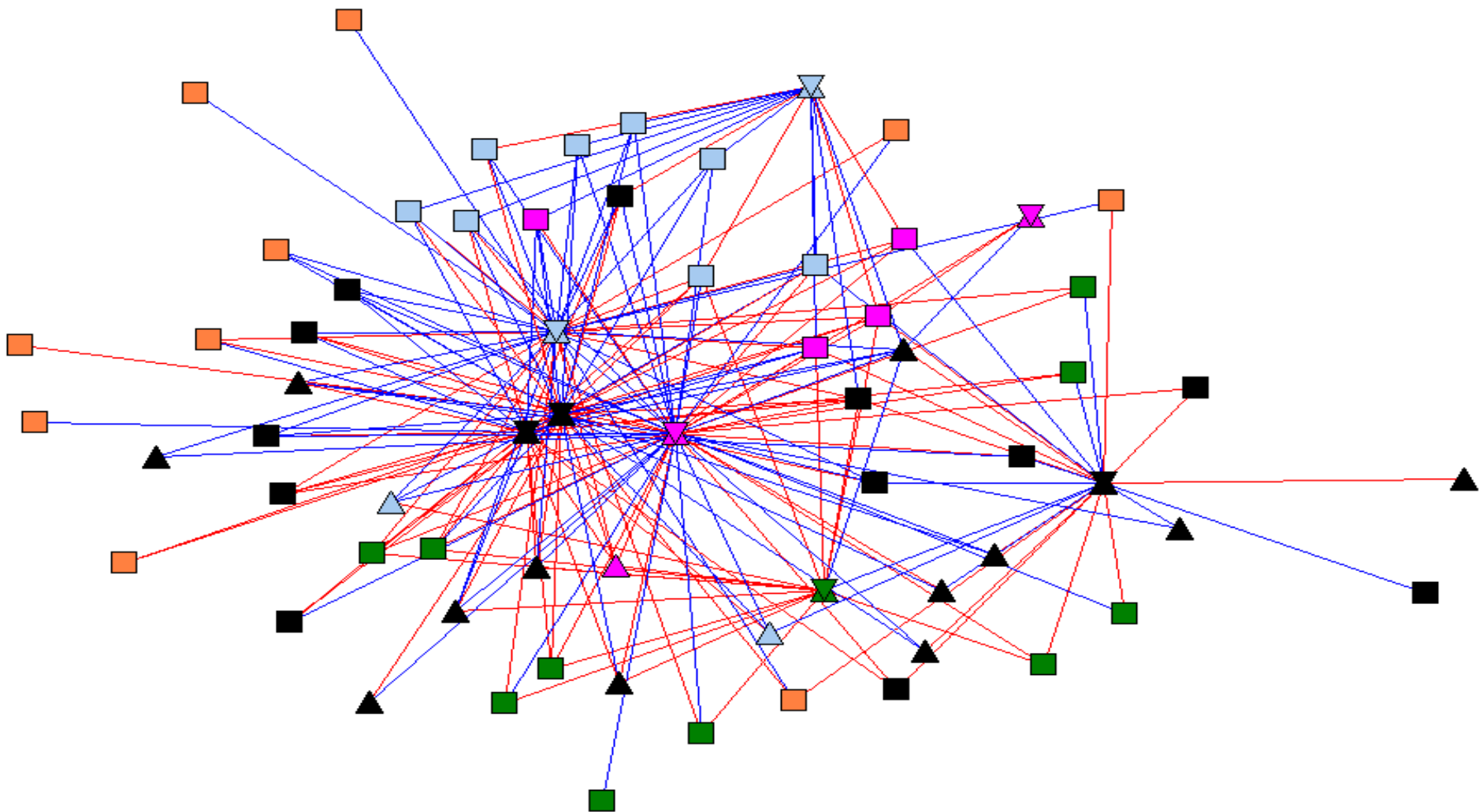
HSCP



Support Staff



Other Specialist Services



# Interaction Type: Confirming Diagnosis

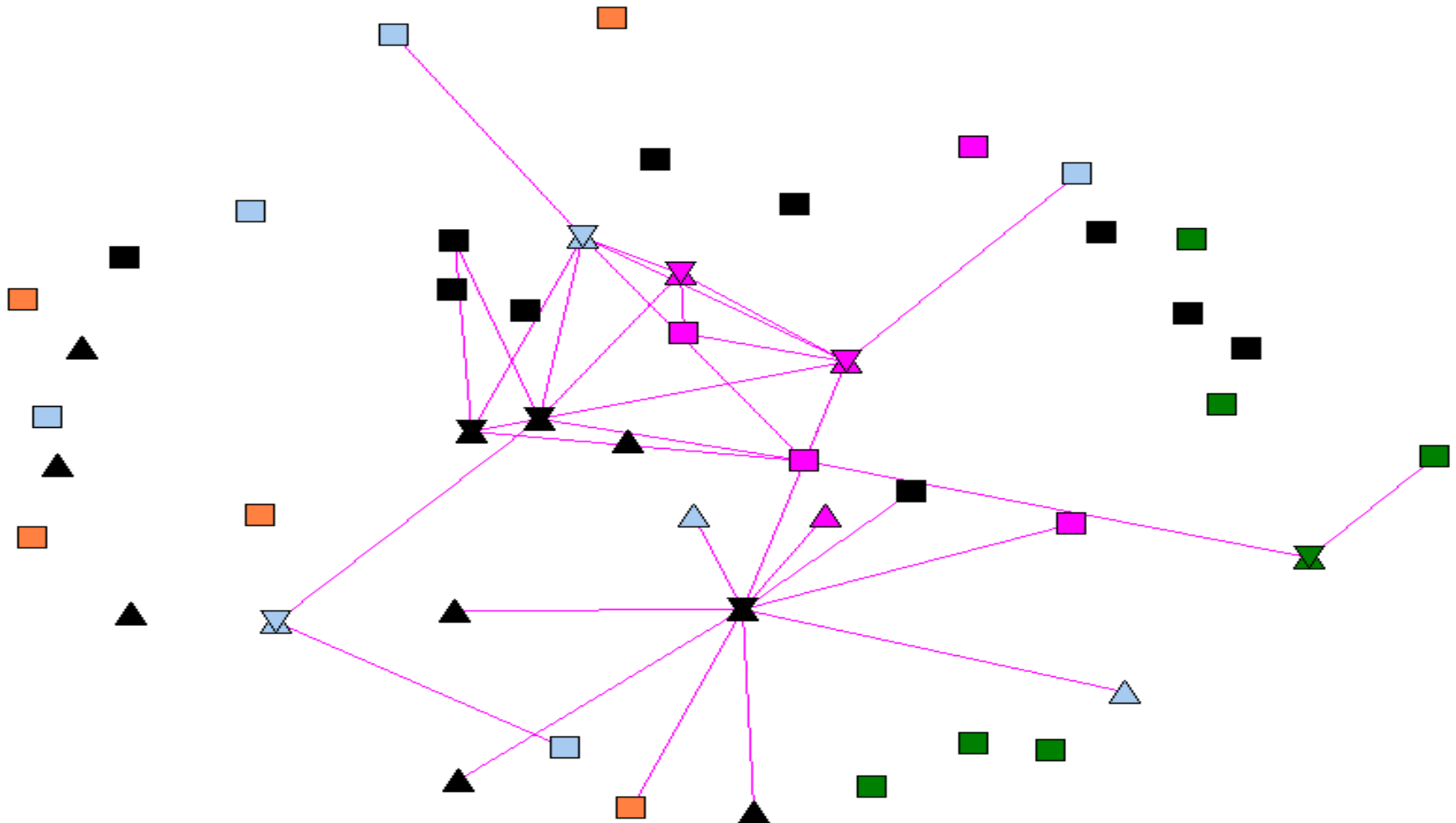
Doctor Nurse HSCP Support Staff Other Specialist Services

Purple Lines = 2 conditions

Black Lines= 3 conditions

Square = Hospital

Triangle =Community



# Confirming Diagnosis

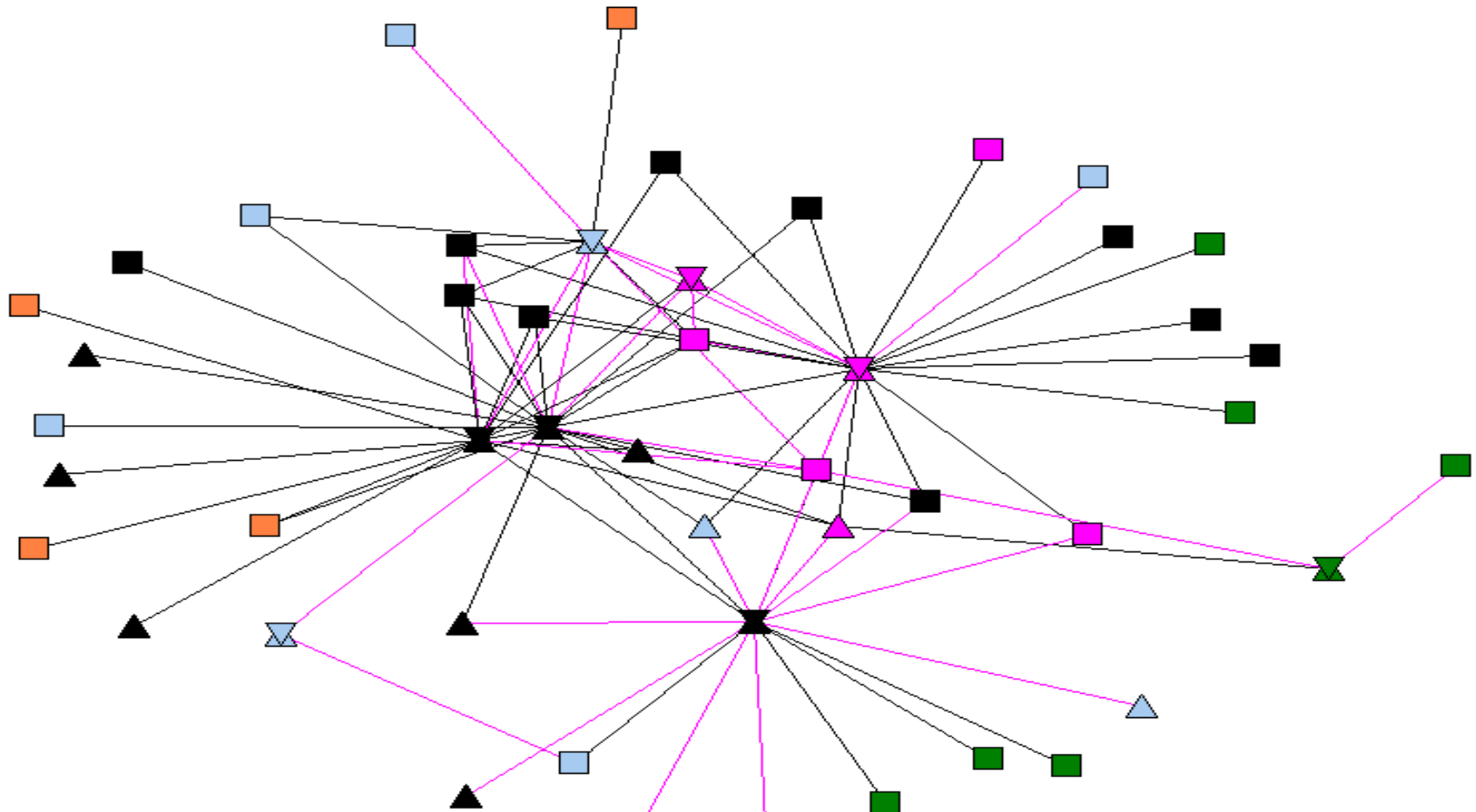
Doctor Nurse HSCP Support Staff Other Specialist Services

Purple Lines = 2 conditions

Black Lines= 3 conditions

Square = Hospital

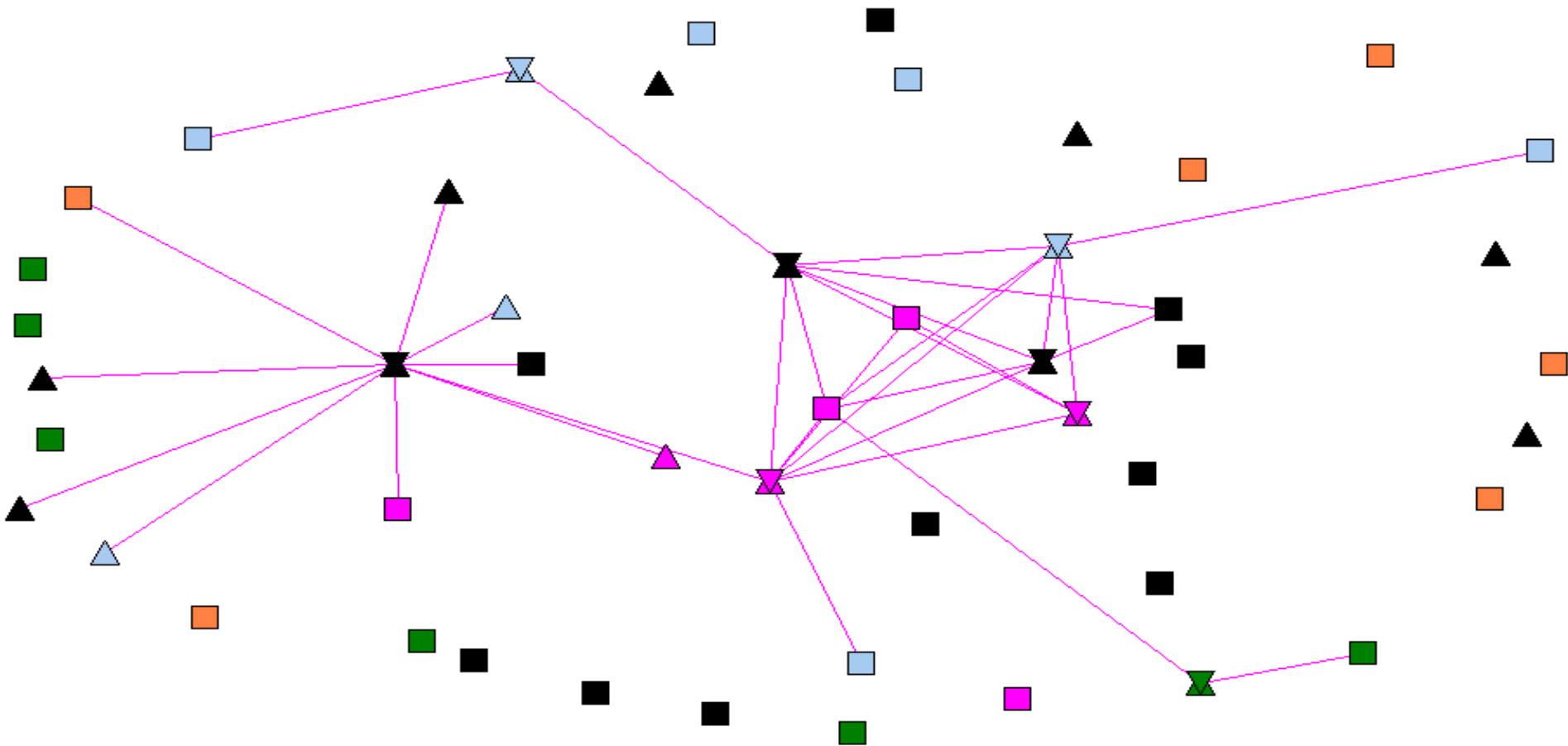
Triangle =Community



# Interaction Type : Care Decisions

Doctor Nurse HSCP Support Staff Other Specialist Services

Purple Lines = 2 conditions  
Black Lines = 3 conditions  
Square = Hospital  
Triangle = Community



# Interaction Type : Care Decisions

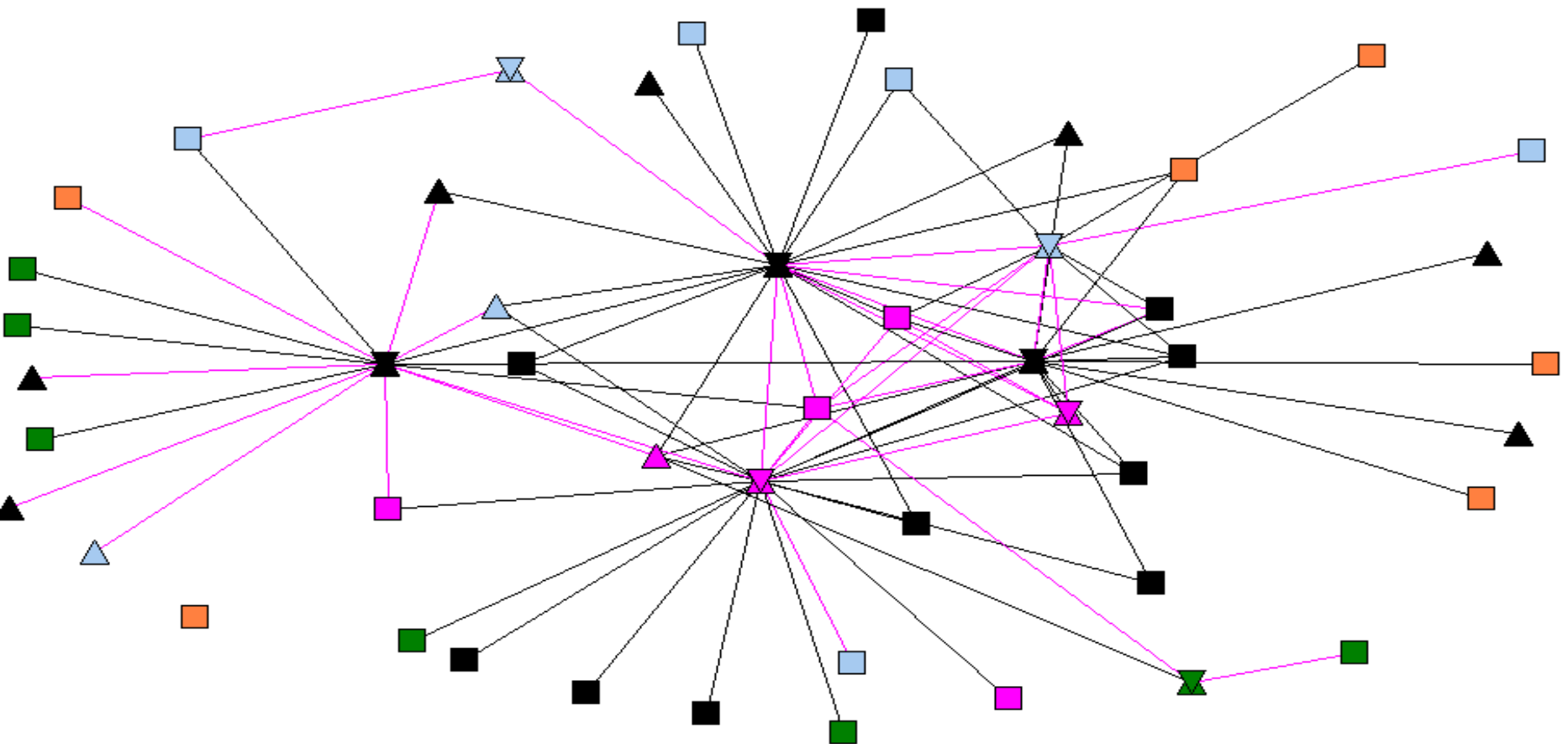
Doctor Nurse HSCP Support Staff Other Specialist Services

Purple Lines = 2 conditions

Black Lines= 3 conditions

Square = Hospital

Triangle =Community



# Interaction Type : Shared Care

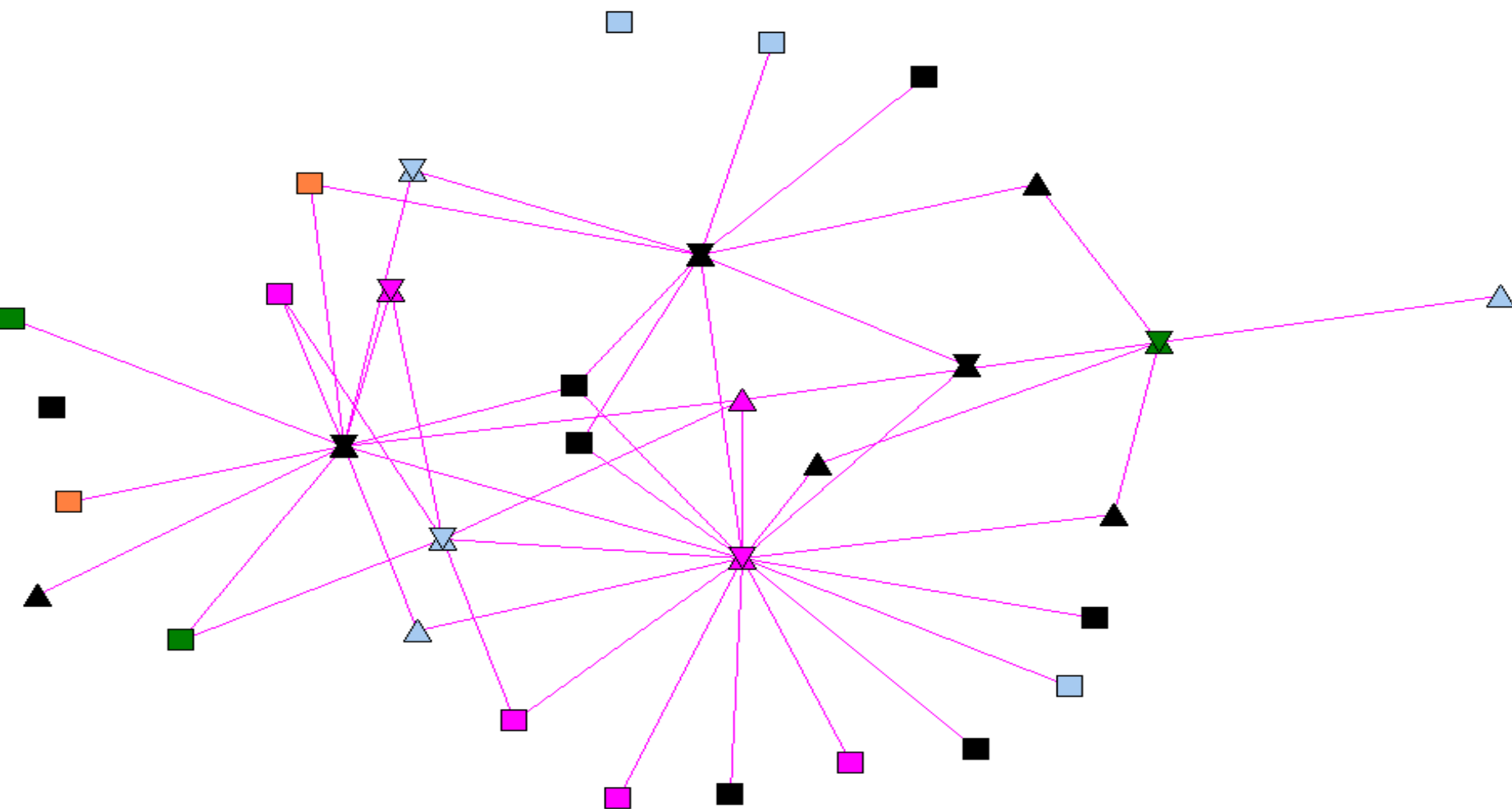
Doctor Nurse HSCP Support Staff Other Specialist Services

Purple Lines = 2 conditions

Black Lines= 3 conditions

Square = Hospital

Triangle =Community



# Interaction Type : Shared Care

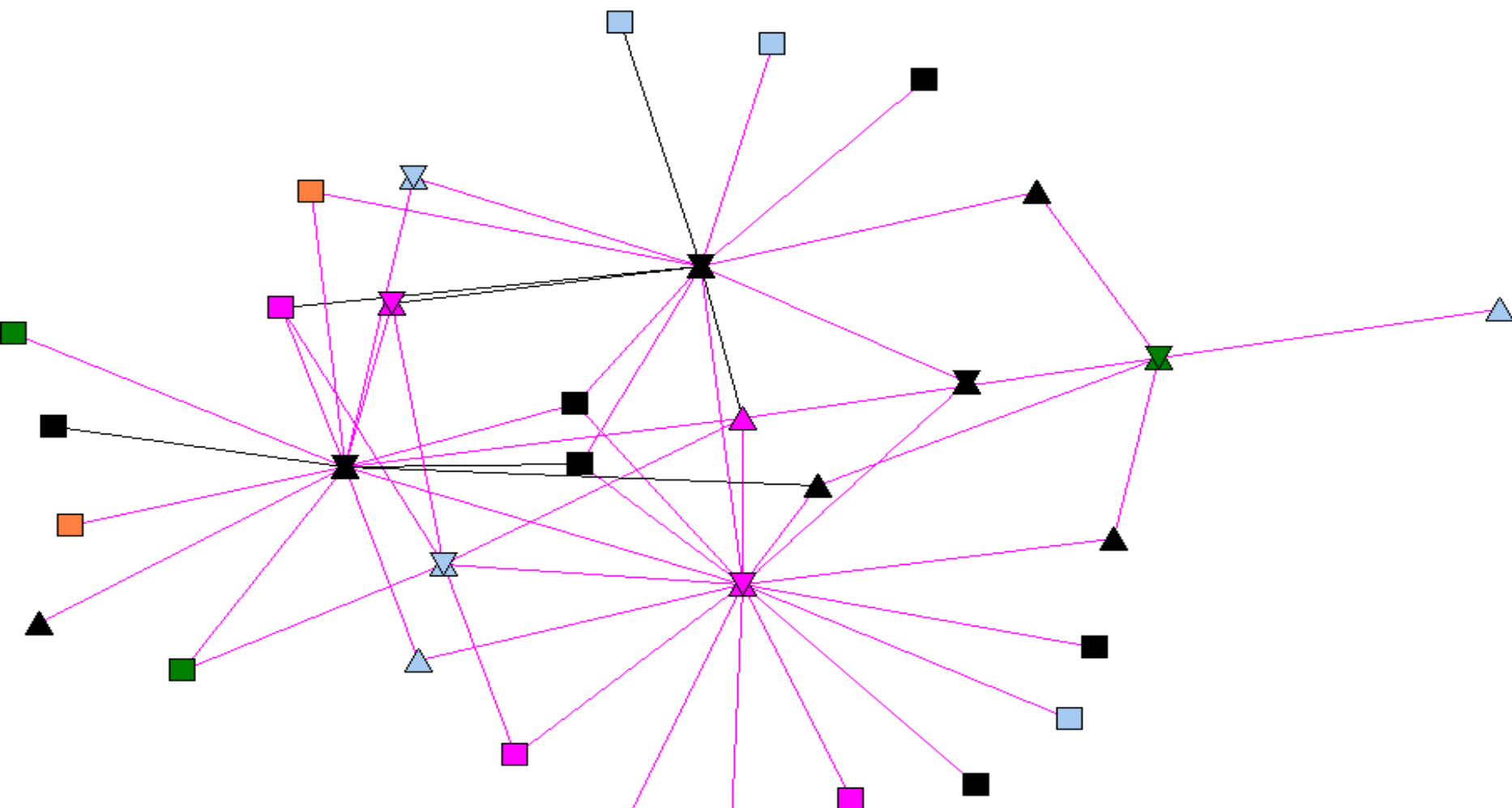
Doctor Nurse HSCP Support Staff Other Specialist Services

Purple Lines = 2 conditions

Black Lines= 3 conditions

Square = Hospital

Triangle =Community



# Preliminary observations...

**Support Staff do seem to have role to play in the coordinating services for both patient cohorts with two and three conditions, but this role is often overlooked**

**Both Nurses and HSCPs have been identified as being involved in confirming diagnosis for both patients cohorts with two and three conditions**

**There are a lot more involvement from Nurses and HSCPS in the Shared Decision-Making process for patients with three conditions, this is good news when it comes to policy recommendations for HSCP involvement in complex care management. However, the involvement of Other Specialist Services for this cohort is very limited.**

**There are already frequent interactions between HSCPs and Doctors in managing patients with 2 conditions; there are less frequent interactions for those with 3 conditions, possibly because they rely on shared computer records as per participant comments, as well potential recall bias due to the rarity of this cohort.**

# What we would like to improve on in collecting more data...

**More participants needed to get a bigger picture but so far it seems..**

- 1. Idealised interactions have been captured so far for patients with two conditions but not so much for patients with three conditions.**
- 2. Support staff did not respond to items relating to types of interactions**
- 3. Respondents from RA department only; more respondents needed from non-RA services to identify cross-disciplinary perspectives on multimorbidity care management**
- 4. Information presented as cognitive networks according to different disciplinary groups and not yet as descriptive behavioural networks**

**Additional participants in study would allow us to perform group-level analysis e.g. density, centralisation, key player metrics, structural equivalence across interaction networks, etc.**

# Seeking Advice and Feedback on the Following...

**Complete Network vs Ego-network**

**Boundary Specification Strategies (cf. Marsden 1990):**

- Complete Network: Attribute; Relation; or Event-based
- Egocentric Network: Direct contacts

**Analysis at Group vs Inter-Group Levels**

**Comparison of Clinicians' Interaction Network and Patients' Clinical and Social Support Networks**

**Thank you!**

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