Information Security Requirements in Patient-Centred Healthcare Support Systems

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Breast Cancer Treatment Scenario

1. GP for examination

if Suspicious?
Breast Cancer Treatment Scenario

1

GP for examination
Breast Cancer Treatment Scenario

1. GP for examination

Specialist (Surgeon) for further examination and history check

Information system
Breast Cancer Treatment Scenario

1

GP for examination

Specialist for further examination and history check
Breast Cancer Treatment Scenario

1. GP for examination

2. Specialist for further examination and history check
Breast Cancer Treatment Scenario

1. GP for examination

2. Specialist for further examination and history check
Breast Cancer Treatment Scenario

1. GP for examination
2. Specialist for further examination and history check
3. Radiologist for Ultrasound/ mammogram
4. Pathologist for a biopsy
5. Initial MDT review-treatment plan
6. Surgeon for an operation
7. Post operation MDT review
8. Oncologist for chemotherapy
9. Palliative care for end-of-life care
Discrete Legacy Systems

1. GP for examination
2. Specialist for further examination and history check
3. Radiologist for Ultrasound/mammogram
4. Pathologist for a biopsy
5. Initial MDT review-treatment plan
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8. Oncologist for chemotherapy
9. Palliative care for end-of-life care
Disease-centred treatment approach

Patient-centred care

1

2

3

4

5

6

7

8

9
Patient-Centred Care
(Shared care)

• Integrated care
• Care teams
• Shared decisions
Why *legacy systems do not fully support* the adoption of Patient-Centred care?

Research question?
Information security balance
(Discrete Systems)

- Confidentiality
- Integrity
- Availability
Informative security policy and rules

(Discrete Systems)

• Balance attained using security policy and rules
Information security controls
(Discrete Systems)

• Balance attained using security **policy** and **rules**
• Enforced using security **controls** (point of control)
Point of control
(Discrete Systems)

• Balance attained using security **policy** and **rules**
• Enforced using security **controls** (point of control)
• Ensures system elements work in **harmony**
Legacy systems compromise on information availability
Information Security Requirements

1. **Role-base access control**
Information Security Requirements

1. Role-base access control
2. Fine-grained access control
Information Security Requirements

1. Role-base access control
2. Fine-grained access control
3. Persistent control
Information Security Requirements

1. Role-base access control
2. Fine-grained access control
3. Persistent control
4. Dynamic control
Information Security Requirements

1. **Role-base access control**
2. **Fine-grained access control**
3. **Persistent control**
4. **Dynamic control**
5. **Circle of trust**
Information Security Requirements

1. **Role-base access control**
2. **Fine-grained access control**
3. **Persistent control**
4. **Dynamic control**
5. **Circle of trust**
6. **Human-level policy awareness**
• Global shift towards patient-centred care

• Weaknesses in legacy supporting systems

• Legacy systems compromising on information availability
Conclusion/2

• Six information security requirements to attain the balance of information security

• Enhance legacy systems to support patient-centred care.
• Information security requirements:
  1. Role-based access control
  2. Fine-grained access control
  3. Persistent control
  4. Dynamic control
  5. Circle-of-trust
  6. Human-readable policy awareness
Conclusion/4

• Integrated healthcare requires a **collaborative effort**, and

• Major shift in **organisational and cultural thinking** to make it work patient-centrically.
Questions?

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