

Awareness of Infection Control within Cystic Fibrosis Health Care – a Scandinavian study

Ellen Julie Hunstad, CNS/DIPC/MPH
Master Thesis,
Nordic School of Public Health, Gothenburg



Ellen Julie Hunstad,
INSG-CF Annual Meeting Gothenburg 2014

Cystic Fibrosis

– a rare clinical challenge

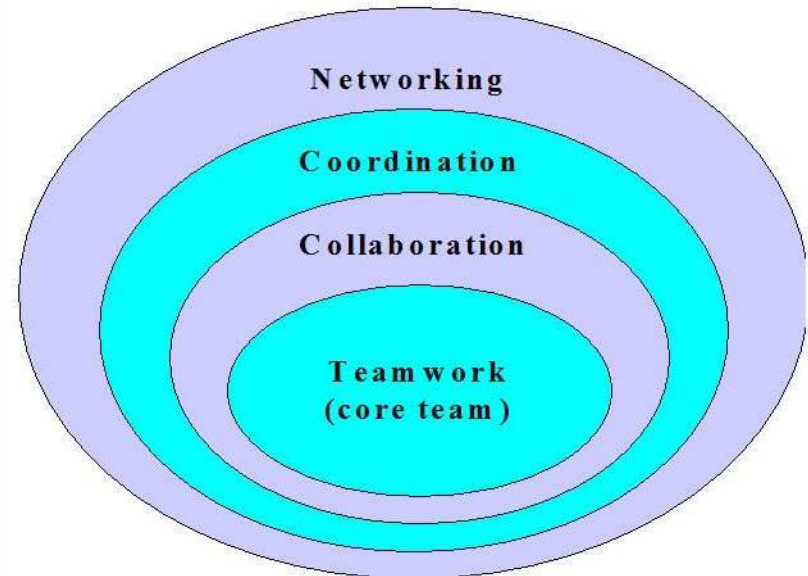
- Cystic fibrosis (CF) is a genetic (autosomal recessive) progressive, complex and incurable multisystem disease with manifestations in the respiratory, gastrointestinal and fertility systems.
- A rare disease
- The clinical consequences include a viscous mucus and changed milieu in the lung leading to chronic bacterial airway infection, progressive pulmonary damage and respiratory failure.
- The recurrent respiratory infections require lifelong monitoring and antibiotic treatment, guided by respiratory tract cultures and resistance testing.

CF Care during the last 20 years

- Evidence of cross-infection between CF patients, in and outside hospital settings have been documented.
 - A Norwegian study (*Fluge 2001*) indicated cross-infection with *P. aeruginosa* between CF patients.
 - Evidence Based Infection Control Recommendations for Patients with CF (*Cystic Fibrosis Foundation 2003*).
 - A Scandinavian multi-centre study revealed huge differences in practical CF care and medication (*Knudsen 2008*).
 - A follow-up study of the CFF Infection Control Guidelines 2003 for CF assessed potential barriers to adherence to these guidelines experienced by health care professionals caring for CF patients (*Garber 2008*);
 - Lack of knowledge, attitude issues and non-adherent practice .

Theoretical framework

- Salutogenic research model
 - What creates health?
- Quality improvement
 - Evidence based health care
- Learning health organisations
 - Multi-
/interprofessional



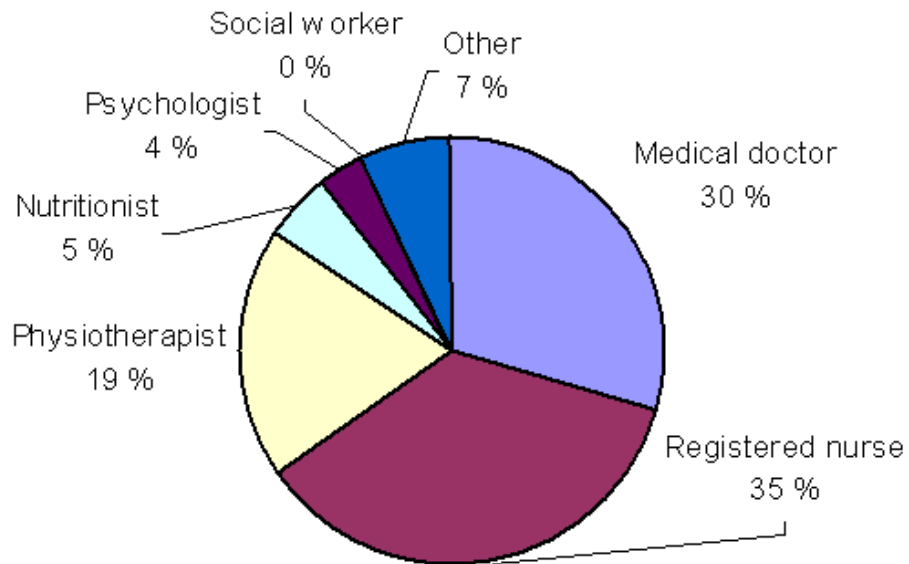
Differing forms of interprofessional work

A daptet from Reeves at al 2010:
Interprofessional Team work for Health and Social Care

From barriers to awareness

- Master topic was an assignment from CF centre leader
- Study sites
 - Scandinavian CF Centres (8)
 - Aarhus, Copenhagen, Lund, Gothenburg, Stockholm, Uppsala, Oslo, Bergen
 - Norwegian CF Satellite Teams (10)
 - Tromsø, Bodø, Levanger, Trondheim, Ålesund, Stavanger, Arendal, Tønsberg, Elverum og Oslo
- A Knowledge, Attitude, Practice (KAP) survey
 - A semi-quantitative questionnaire adapted from Garber (2008). Language English.

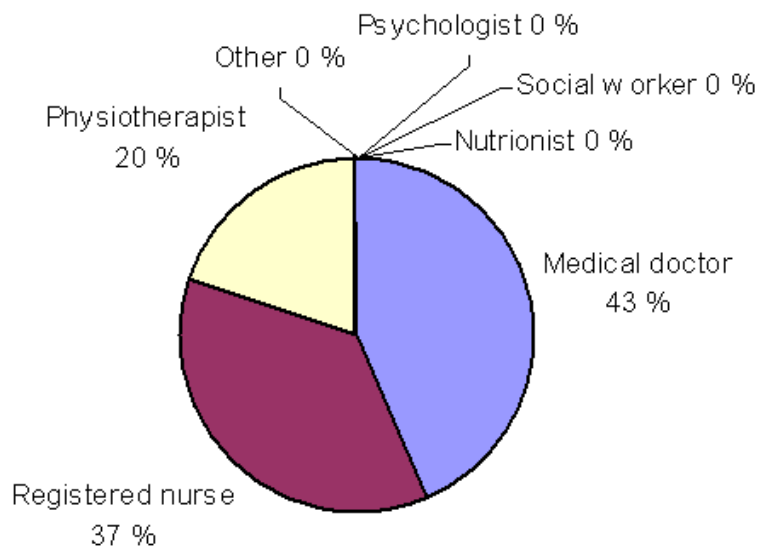
Scandinavian respondents



Scandinavian CF Centres - respondents professions

- 37% (62/166) questionnaires returned / 61 accepted
 - 99% represented CF-centres
 - 35% paediatric patients
33% adult patients
31% transplant patients
 - Median CF-experience 10,5 år

Norwegian respondents



Norwegian CF Satellite Teams - respondents professions

- 58% (30/52) questionnaires returned/accepted
 - 87% representing hospital CF-team
 - 43% paediatric patients
 - 42% adult patients
 - 16% transplant patients
 - Median CF-experience 11,7 år

Awareness to selected National and International Cystic Fibrosis Infection Control Guidelines

Experienced by Health Care Professionals at Scandinavian CF Centres & Norwegian CF Satellite Team

| Guideline component | % Awareness of familiarity | % Awareness of agreement | % Awareness of self-efficacy | % Awareness of outcome expectancy |
|--|-------------------------------|-----------------------------|---------------------------------|--------------------------------------|
| Obtain quarterly cultures (Scandinavian policy every 4-6 weeks) | 68 | 84 | 83 | 96 |
| | 70 | 100 | 70 | 97 |
| Discourage socialisation among hospitalized CF patients | 71 | 75 | 77 | 80 |
| | 47 | 62 | 44 | 80 |
| Educate CF patients and families to practice hand hygiene | 78 | Not asked | 82 | 100 |
| | 54 | Not asked | 63 | 100 |
| Educate CF patients and families to clean and disinfect home nebuliser | 84 | 88 | 85 | 98 |
| | 50 | 90 | 64 | 97 |
| Clean clinic exam room between CF patients | 57 | 85 | 60 | 80 |
| | 40 | 83 | 49 | 80 |

Scandinavian CF Centres – white / Norwegian CF Satellite Teams – shaded
Sufficient awareness > 75% of subject/time/opportunities / Lack of awareness < 20% awareness

Table adapted after Garber et al (2008)

Knowledge awareness

1. CFF Infection control recommendation 2003
 2. ECFS Standards of care 2005
 3. SCFSC Differences in prevalence and treatment of *Pseudomonas aeruginosa* in cystic fibrosis centres in Denmark, Norway and Sweden 2009
- *“From my colleagues and former centre director”*
 - Information & learning – SCFC
 - *“At CF Meeting in Oslo, CF Centre”*
 - Information & learning - NCFST

Attitude awareness

- Agreement of guideline components
- Self efficacy of guideline components
- *“Depending on bacteria”*
 - Discouraging patients from socialisation – SCFC
- *“Use different rooms, because of few patients”*
 - Cleaning room between CF patients - NCFST

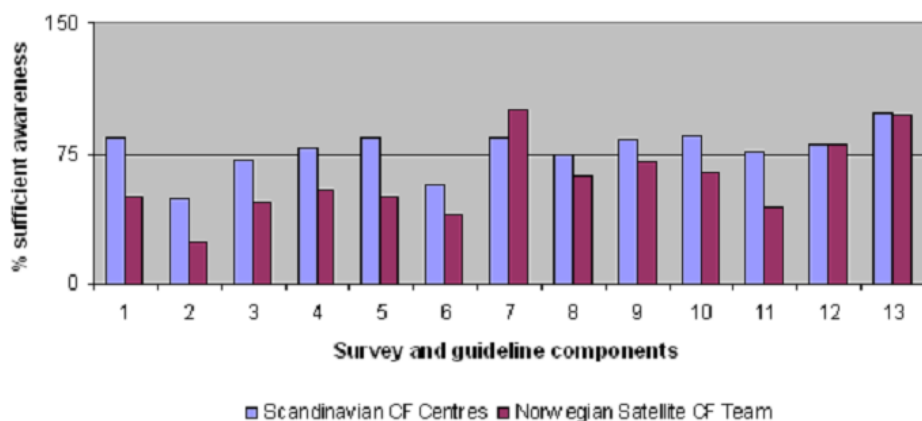
Practice awareness

- External factors for practice affecting the ability to follow selected CF Infection Control items
- *“Probably the nurses. We do not have a routine for this”*
 - patient education about hand hygiene - SCFC
- *“CF centre / CF specialists”*
 - patient education about cleaning home nebulisers - NCFST

Awareness of change

- Any change based on the three recommended CF Infection Control Guidelines
 - CFF 2003
 - ECFS 2005
 - SCFSC 2009
- *“We have not changed, except we have become better to obtain regular cultures”*
 - SCFC
- *“Our attitude and practice have been changed, and I am of course familiar with these changes”*
 - NCFST

Beneficial Impact of Awareness to CF Infection Control Guidelines



| | |
|--|--|
| Adherence to guideline | 1. Educate CF patients to clean and disinfect home nebuliser after use |
| Familiarity with guideline | 2. Overall content of guideline* 3. CF patients should avoid socialisation during hospitalisation 4. Educate CF patients to perform hand hygiene 5. Educate CF patients to clean and disinfect home nebuliser 6. Clean exam rooms between CF patient use |
| Agreement with guideline | 7. Quarterly cultures of respiratory tract are useful for CF 8. CF patients should avoid socialisation during hospitalisation |
| Self-efficacy (confidence in ability to practice guideline) | 9. Collect quarterly cultures of respiratory tract 10. Educate CF patients to clean and disinfect home nebuliser 11. Discourage socialisation between CF patients during hospitalisation |
| Outcome expectancy (belief that practicing guideline will improve patient outcome) | 12. Discourage socialisation between CF patients during hospitalisation 13. Clean and disinfect home nebuliser |

Evidenced based knowledge & practice 1

- **Scandinavian CF Centres**
 - Larger CF population – multiple professions
 - Demanding change for individual protective infection control between CF patients
 - Patient education in CF Infection Control mostly by nurses, some with physiotherapists
 - Change of hygiene regimen based on clinical experience, less on international recommendations.
 - Use of microbial monitoring for best patient logistics
 - *“We have not changed, except we have become better to obtain regular cultures.”*

Evidenced based knowledge & practice 2

- **Norwegian CF Satellite Teams**
 - Small CF population – few multiple professions
 - Less demanding adaption for individual protective infection control between CF patients
 - Patient education in CF Infection Control
 - At visits to the CF Centre in Oslo, mostly by nurses
 - Change of hygiene regimen
 - When recommended from CF Centre in Oslo
 - Microbial monitoring for best patients logistics
 - When recommended from CF Centre in Oslo
 - *“Quarterly as every 12 weeks is too seldom. Every 4 week is OK.”*

Quality improvement for best CF Care

- The study demonstrate "know how, not why"
 - Good practical skills
 - Lack of extensive knowledge
- A need for continuous quality improvement of KAP within CF Infection Control
 - Education and reeducation of patients and family
 - Education health professionals in written guidelines
 - Collaboration and shared learning for professionals
 - Implementation of evidence practice

Clinical impact

- Education and re-education of patient and family may have a positive impact
 - to ensure best awareness of CF infection control and
 - to reduce risk for cross infection in- and outside hospital settings.



Thank you for your attention!

- The study is available as
 - e-poster 244
 - poster 244

Awareness of Infection Control within Scandinavian Cystic Fibrosis Health Care

Ellen Julie Hunstad¹, Egil Isakcheim¹, Marits Gijlem²

¹Haukeland University Hospital, Centre for Patient Safety, Centre for Infection Control, Department of Microbiology, Haukeland University Hospital, 5017, Bergen, Norway; ²Oslo University Hospital, Department of Microbiology, 0407, Oslo, Norway

Aims: To illuminate awareness of infection control in practice.

Method: Semi-quantitative questionnaire assessing knowledge, attitude and practice (aKAP survey), was distributed to health care providers at 8 Scandinavian CF centres and 10 Norwegian Satellite teams.

Fig. A

Fig. B

Respondents: The return rate was 37% (61/166) for the Scandinavian CF centres and 58% (30/52) for the Norwegian Satellite teams. One CF centre response was incomplete and omitted from analysis. 43% of the respondents were working with paediatric care, 42% with adult care and 16% with lung-transplanted CF patients. See figures a) and b) for distribution of professions.

Conclusion: For best CF Infection Control – to know what to do and why!
To reduce the risk of cross infection among CF patients in health and non health care settings the maintenance of increased awareness of CF guidelines from health care professionals are required.

Table 1: Awareness of Infection Control Guidelines

| Study component | Scandinavian CF Centres | Scandinavian CF Centres | Scandinavian CF Centres | Scandinavian CF Centres |
|--------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |

Table 2: Ability to follow infection control guidelines

| Study component | Scandinavian CF Centres | Scandinavian CF Centres | Scandinavian CF Centres | Scandinavian CF Centres |
|--------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |

Results: The agreement of importance of and willingness to follow selected important hygiene guidelines were very good at both CF centres and satellite teams. The awareness of exact content in the written guidelines was lower for both study parts. See table 1. Teaching patients proper hand hygiene was CF centres' primary responsibility in general. Respondents indicate having a more specific discipline knowledge connected to profession and practice in CF care. Education and in-service training of CF Infection Control was less sufficient for CF centres and satellite teams. See table 2.

Scandinavian CF Centres (n=61) and Norwegian Satellite Teams (n=30)

Table 3: Knowledge of Infection Control Guidelines

| Study component | Scandinavian CF Centres | Scandinavian CF Centres | Scandinavian CF Centres | Scandinavian CF Centres |
|--------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |
| Check control guidelines | 15 | 14 | 13 | 12 |

Discussion: Recommendation of CF Infection Control as a tool for patient safety in hospital care, both in basic and CF health care on an individual and a system level, seems to be more in use at the CF centres compared to the satellite teams. Types of profession and involvement in clinical care with CF patients, cause different individual experience as professional - and this may influence to less knowledge in specific issues as demonstrated by respondents from both study parts.

© Adapted permission from Dunne 2009