

**NURSING DIAGNOSES, INFLUENCE OF AN ELECTRONIC NURSING CARE PLAN
WITH STANDARDIZED NURSING LANGUAGES
ON CORRECTNESS, AGREEMENT, AND ACCURACY.**

AN EXPERIMENTAL STUDY

Helen de Graaf-Waar, RN, MSc



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Content

- Background
- Aim and research questions
- Research design
- Results
- Conclusion and limitations
- Discussion and recommendations



Background

Purpose Nursing Documentation

- Shared responsibility

- Representation nursing process

Standardized Nursing Languages

- Evidence in the literature on improvements of nursing documentation

NANDA-I classification

- internationally implemented and recognized

- PES structure

Definitions

Accuracy of NDx

NDx with supporting cues or contributing factors

PES structure

Agreement on NDx

As in inter-rater reliability. Agreement between nurses mutual

Correctness of NDx

As in agreement with 'golden standard';

Correct NDx according to expert nurses or presented in the case.

Electronic Health Records and SNL

Combination of SNL and EHR improves diagnostic accuracy and thus patient outcomes



Cochrane review: no evidence that SNL improves patient outcomes

Bruylants et al (2013):

*implementation of EHR, pre-post measurement:
accuracy not influenced by EHR*

Kurashima et al (2008):

*RCT, effects of Computer Aided Nursing
diagnoses System
significant decrease in time needed
no significant improvement of accuracy*

Aim and research questions

Aim

To test whether using EHR based nursing documentation including all elements of standardized NDx is of influence compared to using handwritten PES format nursing care plans.

Research Questions

What are the differences between groups in:

1. Correctness, for sets of NDx;
2. Agreement between nurses on sets of NDx;
3. Accuracy of NDx per single ND and per nurse;

Method

Design

Experimental design, pilot study

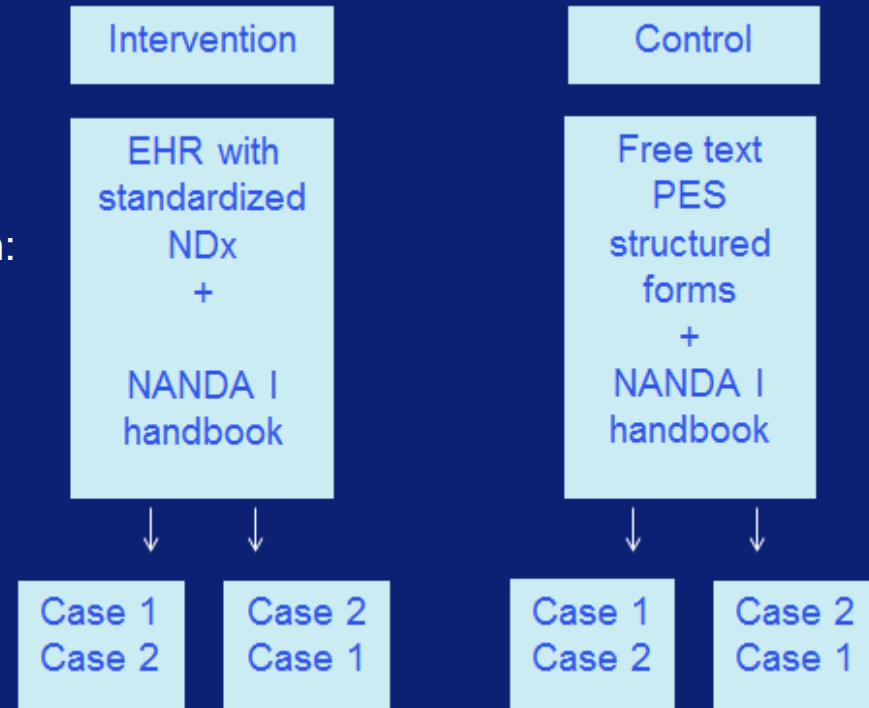
Setting:

Erasmus University Center, Rotterdam:
> 2500 nurses, > 45 wards

Convenience Sample

Inclusion criteria:

1. patient assessment at least 1/week
2. patient care planning at least 1/week
3. adult care



Method; instrumentation

Electronic Nursing Care Plan

- NANDA-I NDx, Individualization per patient
- List wise presentation: selection of NDx for specialty area
alphabetically ordered
Gordon's Functional Health Patterns

Written cases

- 2 cases , orthopedic and cardiology
- guidelines by Lunney

Questionnaires

i.a. education, working experience, PES and/or NDx in daily practice

Other

manuals, Likert scale on readiness

Results Sample		EHR (n=15)	Free text (n=13)	p-value ^a
Gender,	(n) M/F	2/13	1/12	
Age	mean (range)	32 (20-60)	35 (21-61)	.387
Years since graduation,	mean(range)	8,9 (-2-34)	4.7 (-1-20)	.413
Specialty area:	Surgical	2	3	
	Internal medicine	2	3	
	Medical oncology	7	4	
	Surgical oncology	3	3	
	Psychiatry	1	0	
Education level:	RN, bachelor degree	10	7	
	RN	3	3	
	Student nurse	2	3	
Use of NDx and/or PES in practice	n (%)	11 (73%)	9 (69%)	
Training on NDx and or clinical reasoning after initial education	(n (%))	10 (67%)	7(54%)	
Use handbook (n (%))	Case 1	5 (33%)	9 (70%)	
	Case 2	3 (20%)	10 (77%)	

SPSS 21

Translation of free text NDx to NANDA-I NDx

Non-parametric statistics (Mann-Whitney U test).

Study Parameters:

Accuracy of NDx: Lunney's scale for accuracy

Correctness of sets of NDx: Jaccard Index

Agreement on NDx: Percentage agreement.

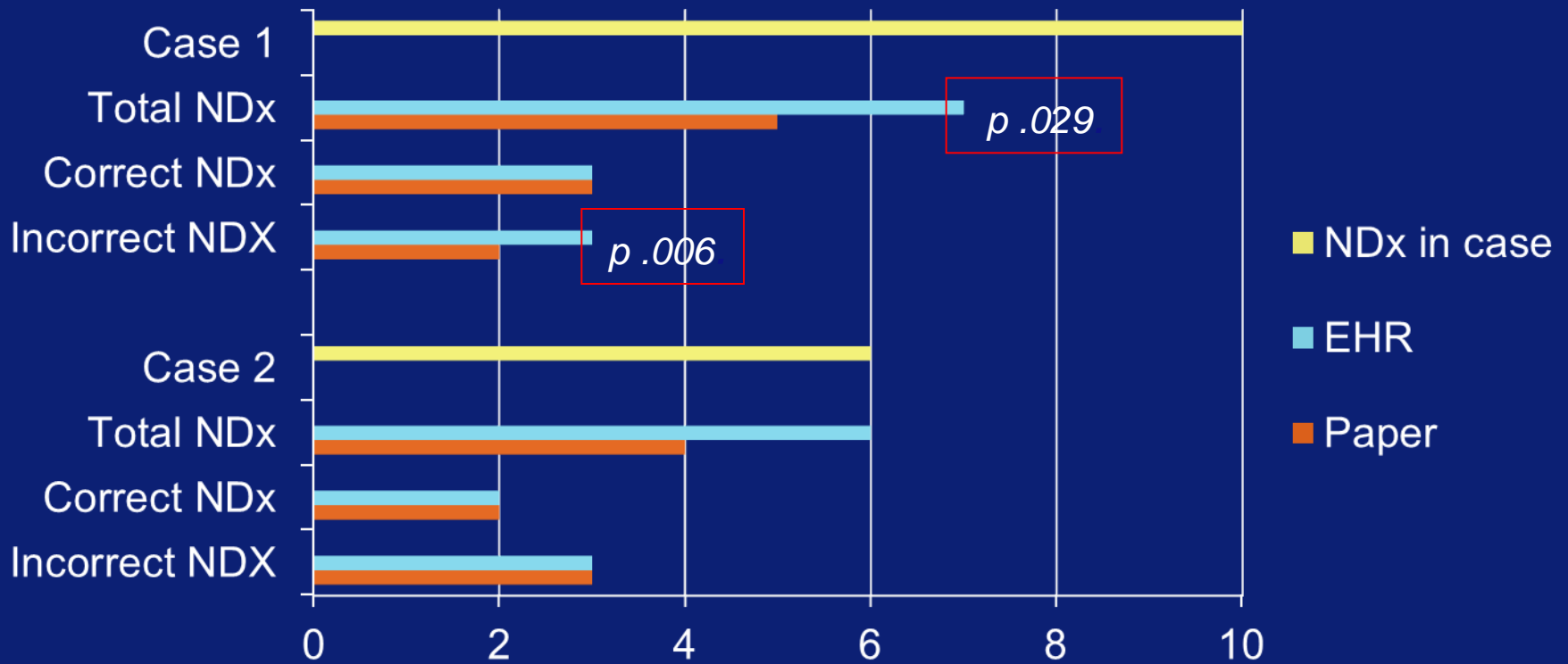
Results Correctness (1)

Sets of NDx (Jaccard Index)

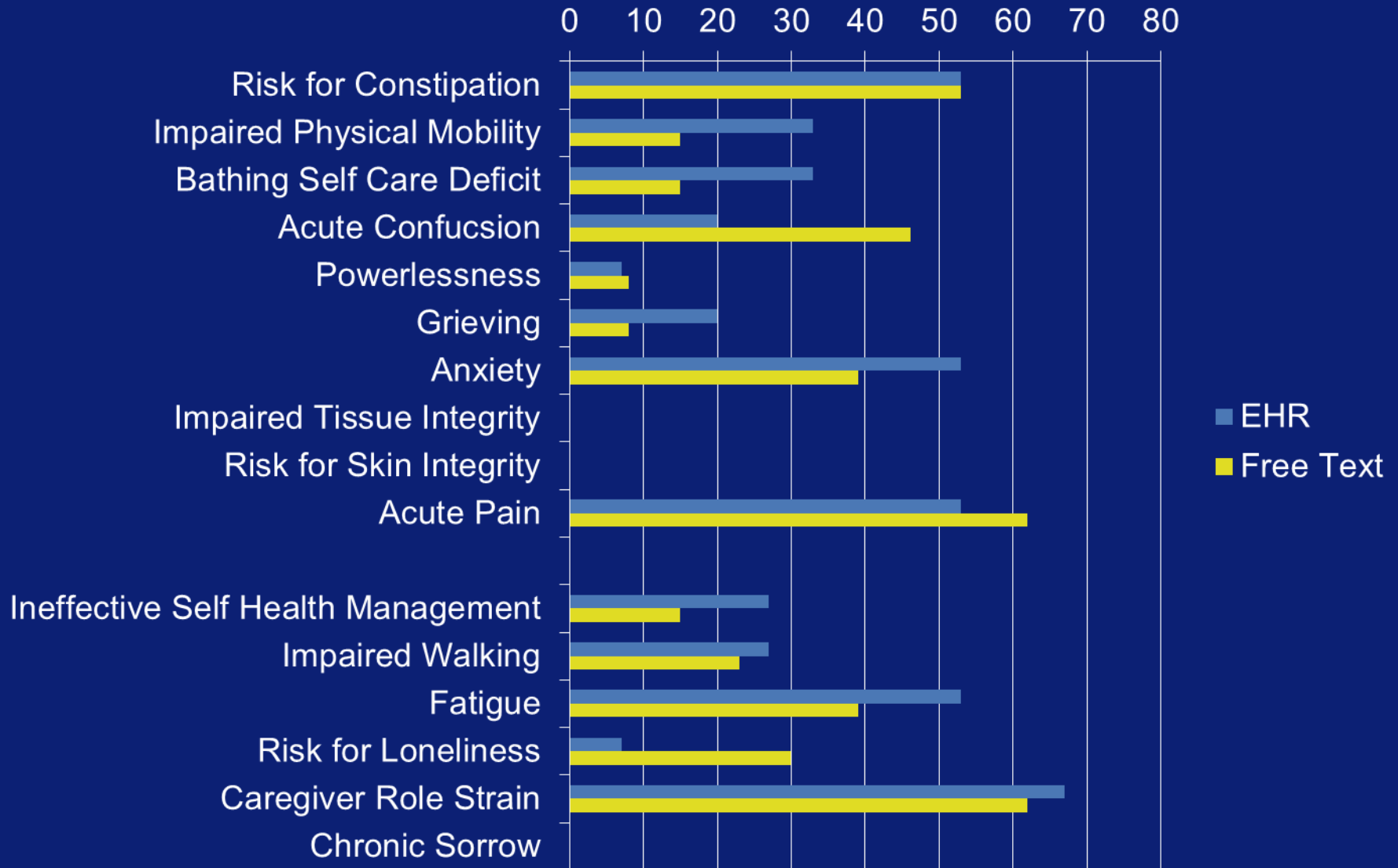
	<i>EHR</i>	<i>Free text</i>	<i>Se</i>	<i>p-values</i>
Case 1	.21 (0-.38)	.25 (0-.33)		.854
Case 2	.20 (0-.38)	.25 ((0-.33)		.627

Results Correctness (2)

Nr of NDx (n)



Results Agreement (%)



Results Accuracy

	EHR (n=15)	Free text (n=13)	
	Median (range)	Median (range)	p-value
Case 1	2.43 (1.50-3.75)	3.00 (0.00-3.60)	.134
Case 2	2.75 (1.00-4.00)	2.25 (0.67-4.00)	.180

Inter rater reliability Lunney's Scale for accuracy .64

Discussion

Nurse using the EHR defined more NDx

Call on deductive reasoning skills?

Agreement and accuracy levels are low

Diagnostic process and reasoning skills?

Wide variability in NDx

Raw data trend in favor of correct NDx and close concepts

Layers in cases not detected,

Clinical reasoning skills?

Limitations

Low inter-rater reliability Lunney's scale

Proportion of NDx in cases

Low nr of NDx in the data, lack of Power

Conclusion

Influence of SNL? No clinical implications

Expectation that differences are relevant if power increases

Feasible design, include qualitative analysis

Recommendations

Future EHR developments focus on SNL

Develop knowledge on effects of SNL

Follow-up research, experimental and qualitative

Thank you for your attention

Helen de Graaf-Waar
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Intervention: Electronic Nursing Care Plan

Doel: TEST 32123321321
Patroon: Voedings- en stofwisselingspatroon
Contactdatum: 26-09-2012 17:18
Gebruiker: Bas, M.
Status: Actief

Afc	Omschrijving	Patroon
<input checked="" type="checkbox"/>	Acute Pijn	Cognitie- en waarnemi...
<input checked="" type="checkbox"/>	Acute Verwardheid	Cognitie- en waarnemi...
<input checked="" type="checkbox"/>	Angst	Zelfbelevingspatroon
<input checked="" type="checkbox"/>	Beschadigd Mondslimvlies	Voedings- en stofwiss...
<input checked="" type="checkbox"/>	Chronische Pijn	Cognitie- en waarnemi...
<input checked="" type="checkbox"/>	Diarree	Uitscheidingspatroon
<input checked="" type="checkbox"/>	Dreigend Huiddefect	Voedings- en stofwiss...
<input checked="" type="checkbox"/>	Dreigende Obstipatie	Uitscheidingspatroon
<input checked="" type="checkbox"/>	Geestelijke nood	Waarden- en ethos...
<input checked="" type="checkbox"/>	Gevaar voor vallen	Patroon van gezondh...
<input checked="" type="checkbox"/>	Gewijzigd seksueel patroon	Seksualiteits- en wa...
<input checked="" type="checkbox"/>	Gewijzigd voedings- en stofwisselingspatroon	Voedings- en stof...
<input checked="" type="checkbox"/>	Gewijzigde gezinsproces...	Rollen- en relatiesp...
<input checked="" type="checkbox"/>	Gewijzigde zintuiglijke waarneming:...	Cognitie- en waarnem...
<input checked="" type="checkbox"/>	Gewijzigde zintuiglijke waarneming:...	Cognitie- en waarnem...
<input checked="" type="checkbox"/>	Gewijzigde zintuiglijke waarneming:...	Cognitie- en waarnem...
<input checked="" type="checkbox"/>	Gewijzigde zintuiglijke waarneming:...	Cognitie- en waarnem...
<input checked="" type="checkbox"/>	Gewijzigde zintuiglijke waarneming:...	Cognitie- en waarnem...
<input checked="" type="checkbox"/>	Gewijzigde zintuiglijke waarneming:...	Cognitie- en waarnem...
<input checked="" type="checkbox"/>	Huiddefect	Voedings- en stof...
<input checked="" type="checkbox"/>	Hyperthermie	Voedings- en stof...
<input checked="" type="checkbox"/>	Incontinentie voor feces	Uitscheidings- en wa...
<input checked="" type="checkbox"/>	Ineffectieve individuele Coping	Stressverwerkingspat...
<input checked="" type="checkbox"/>	Infectiegevaar	Patroon van gezondh...
<input checked="" type="checkbox"/>	Machteloosheid	Zelfbelevingspatroon
<input checked="" type="checkbox"/>	Misselijkheid	Voedings- en stofwiss...
<input checked="" type="checkbox"/>	Mobiliteitstekort	Activiteitenpatroon
<input checked="" type="checkbox"/>	Moedeloosheid	Zelfbelevingspatroon

NDx for this specialism

Functional Health Patterns

Other NDx also available

Toon alle specialismen Toon stopgezette diagnoses

Diagnose	Doel	Patroon	Contactdatum	Gebruiker	Status
Beschadigd Mondslijmvlies	TEST 32123321321	Voedings- en stofwisselingspatroon	26-09-2012 17:18	Bas. M.	Actief

Selecteer diagnose

Afd.	Omschrijving	Patroon
<input checked="" type="checkbox"/>	Acute Pijn	Cognitie- en waarnemi...
<input checked="" type="checkbox"/>	Acute Verwardheid	Cognitie- en waarnemi...
<input type="checkbox"/>	Adequaat omgaan met de Behandeling en leefregels: individ...	Patroon van gezondh...
<input type="checkbox"/>	Afwijkend gebit	Voedings- en stofwiss...
<input type="checkbox"/>	Afwijkende groei en ontwikkeling	Activiteitenpatroon
<input checked="" type="checkbox"/>	Angst	Zelfbelevingspatroon
<input type="checkbox"/>	Anticiperende rouw	Rollen- en relatiespat...
<input type="checkbox"/>	Beperkingen in het lopen	Activiteitenpatroon
<input type="checkbox"/>	Beperkte mobiliteit in bed	Activiteitenpatroon
<input type="checkbox"/>	Beperkte rolstoelmobiliteit	Activiteitenpatroon
<input type="checkbox"/>	Bereidheid tot verbeterd ouderschap	Rollen- en relatiespat...
<input type="checkbox"/>	Bereidheid tot verbetering van gecoördineerd zuigelingengedrag	Activiteitenpatroon
<input checked="" type="checkbox"/>	Beschadigd Mondslijmvlies	Voedings- en stofwiss...
<input type="checkbox"/>	Beschermingstekort	Patroon van gezondh...
<input type="checkbox"/>	BeslisConflict	Cognitie- en waarnemi...
<input type="checkbox"/>	Chronisch geringe zelfachting	Zelfbelevingspatroon
<input type="checkbox"/>	Chronisch verdriet	Rollen- en relatiespat...
<input checked="" type="checkbox"/>	Chronische Pijn	Cognitie- en waarnemi...
<input type="checkbox"/>	Chronische verwardheid	Cognitie- en waarnemi...
<input type="checkbox"/>	Defensieve coping	Stressverwerkingspatr...
<input type="checkbox"/>	Desoriëntatiesyndroom	Cognitie- en waarnemi...
<input type="checkbox"/>	Destructieve gezinscoping	Stressverwerkingspatr...
<input checked="" type="checkbox"/>	Diarree	Uitscheidingspatroon
<input type="checkbox"/>	Disfunctionele Beademingsontwenning	Activiteitenpatroon
<input type="checkbox"/>	Disfunctionele rouw	Rollen- en relatiespat...
<input type="checkbox"/>	Doodsangst	Zelfbelevingspatroon
<input checked="" type="checkbox"/>	Dreigend Huiddefect	Voedings- en stofwiss...

Select appropriate NDx

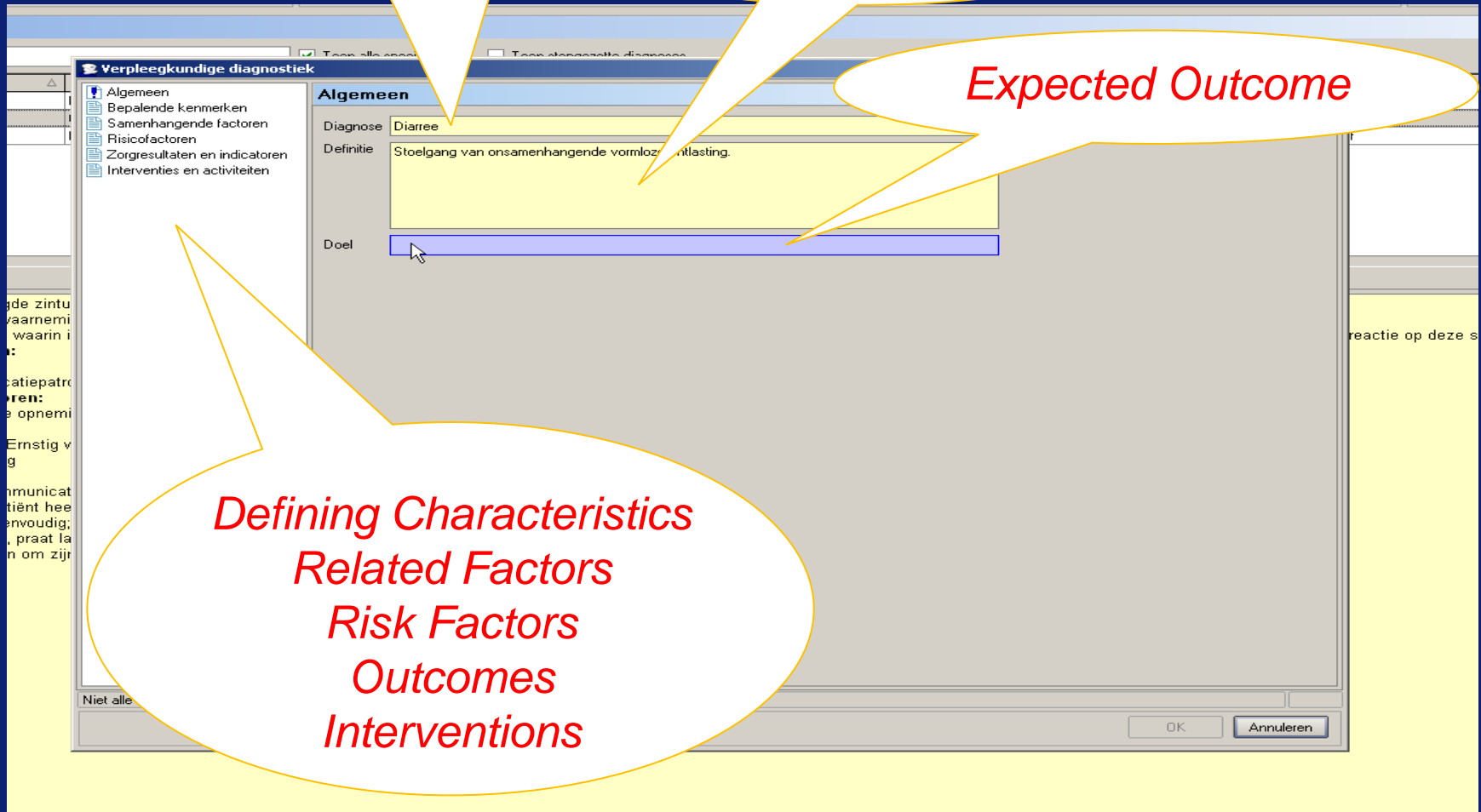
Electronic Nursing Care Plan

Diagnoses label

Definition

Expected Outcome

Defining Characteristics
Related Factors
Risk Factors
Outcomes
Interventions



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