Overcoming the barriers to pain control

Wendy H Oldenmenger

Coordinator Oncology Nursing Research, Erasmus MC, Rotterdam
Lecturer, University of Applied Science, Rotterdam
Board Member, European Oncology Nursing Society
Reasons for inadequate pain relief

- Guidelines Cancer Pain Relief
  - Effective: 70-90%
    - Complex pain problems
      - Organisational barriers
      - Professional-related barriers
      - Patient-related barriers
Complex pain problems

Various complex pain problems:

- Breakthrough cancer pain
- Neuropathic pain
- Cancer-induced bone pain
Reasons for inadequate pain relief

- Guidelines Cancer Pain Relief
  - Effective: 70-90%
    - Complex pain problems
    - Organisational barriers
      - Professional-related barriers
      - Patient-related barriers
Organisational barriers


*Average milligram per capita calculated by adding milligram per capita statistic for each country and dividing by the total number of countries.


Organisational barriers

Figure 1: Number of potential barriers quantitatively identified according to category (except language) per country
Organisational barriers

National Drug Treatment Monitoring System (NDTMS)
https://www.rcoa.ac.uk/faculty-of-pain-medicine/opioids-aware/clinical-use-of-opioids/ndtms
Organisational barriers

Opioid misuse lead to at least 456 deaths in UK hospital

Concerns raised as opioid prescriptions rise across UK
Reasons for inadequate pain relief

- Guidelines Cancer Pain Relief: Effective 70-90%
  - Complex pain problems
  - Organisational barriers
  - Professional-related barriers
  - Patient-related barriers
Professional-related barriers

- Lack of assessment and documentation
  - 20-80% indicates inadequate pain management as main barrier
    - Did not ask for pain
    - Did not use instruments to measure pain intensity
Professional-related barriers

- Lack of assessment and documentation
  - 20-80% indicates inadequate pain management as main barrier
    - Did not ask for pain
    - Did not use instruments to measure pain intensity
Pain assessment: screening and monitoring
DIE SCHMERZ-ZIFFER

Inleitung
Auf dieser Station werden die Schmerzen registriert. Wir machen daraus sorgfältig, in welchem Maße die Patienten Schmerzen empfinden. Das Schmerzbeben so gut wie möglich sagen wir alle Patienten auf dieser Stelle, in einer Ziffer auszudrücken. Ein Thermometer ist ein zuverlässiges Instrument, ob Sie Schmerzen haben oder nicht, um einer anderen Person begreifbar, ein anderer kann Ihre Schmerzen ausdrücken. Kann dabei behilflich die Schmerzen in einer Ziffer ausdrücken und das sozialen Aspekt der Schmerzen in der Klinik zu berücksichtigen.

Die Schmerz-Ziffer
Zweimal täglich wird eine Krankenschwester (eventuelle) Schmerzen mit einer 0-10-Ziffer auf einer Skala von 0 (keine Schmerzen) bis 10 (am schlimmsten) registrieren. Die Zahlen werden in der Patientenakte festgehalten und bei Änderungen aktualisiert. Die Schmerzen werden auch während der ärztlichen Untersuchungen und Behandlungen berücksichtigt.

GRADING PAIN

Introduction
On this ward we register pain experienced by patients. This patient’s needs are efficiently met by a daily assessment of the extent to which they experience pain, which can then be used to guide treatment decisions.

AĞRI KAYDETME KONUSUNA İLİŞKİN

Giriş
Bu bakım bölümünde ağrı kaydediliyor. Bunun için bir defa ağrıları için derece hissettiklerini bir not vererek hastaların ağırını ne derece hissettiklerini daha iyi anlamak için.

O VALOR DA DOR

Introdução
Grado de dolor

Introducción
En este departamento del hospital se registra el grado de dolor. Lo hacemos para obtener una mejor idea de la intensidad del dolor que sienten los pacientes. Esto puede ayudar a combatir la mejor posible el dolor en función del dolor que los pacientes sienten. Para ello, usamos una escala del 0 (no dolor) al 10 (dolor extremo).

Schmerzen sind eine persönliche Erfahrung. In dieser Klinik werden die Ziffern von 0 (keine Schmerzen) bis 10 (am schlimmsten) eingesetzt, um die Schmerzen der Patienten zu registrieren. Die Ziffern werden in der Patientenakte festgehalten und bei Änderungen aktualisiert. Die Schmerzen werden auch während der ärztlichen Untersuchungen und Behandlungen berücksichtigt.
Breakthrough pain

The following questions relate to your breakthrough pain. Breakthrough pain refers to the shortest duration of pain you experience.

Where is your breakthrough pain? Please indicate on the picture with a cross (X).

Neuropathic Pain Diagnostic Questionnaire

McGill Pain Questionnaire

Please complete this questionnaire by ticking one answer for each question.

A “YES” score of ≥4 is diagnostic of Neuropathic Pain.

By circling your answers.

1. Flickering
2. Quivering
3. Pulsing
4. Throbbing
5. Beating
6. Pounding
7. Jumping
8. Tingling
9. Radiating
10. Numbing
11. Tiring
12. Sickening
13. Fearful
14. Exhausting
15. Suffocating
16. Frightful
17. Terrifying
18. BRIEF
19. MOMENTARY
20. TRANSIENT
21. RHYTHMIC
22. PERIODIC
23. INTERMITTENT
24. CONTINUOUS
25. STEADY
26. CONSTANT

Patient’s Name: ____________________ Date: ________________ Time: __________ am/pm

PRI: S (1-10)  A (11-15)  E (16)  M (17-20)  PRI(T) (1-20)  PPI

Additional comments: ____________________________
Professional-related barriers

- Lack of assessment and documentation
  - 20-80% indicates inadequate pain management as main barrier
    - Did not ask for pain
    - Did not use instruments to measure pain intensity

- Lack of priority
Professional-related barriers

- Lack of assessment and documentation
- Lack of priority
- Lack of knowledge
Treatment with subcutaneous and transdermal fentanyl: results from a population pharmacokinetic study in cancer patients

Astrid W. Oosten¹ · João A. Abrantes²,³,⁴ · Siv Jönsson⁴ · Peter de Bruijn¹ · Evelien J. M. Kuip¹ · Amílcar Falcão²,³ · Carin C. D. van der Rijt¹,⁵ · Ron H. J. Mathijssen¹

Fig. 4 Simulated fentanyl plasma concentrations during the rotation from a subcutaneous infusion of 50 μg/h at steady state to a transdermal patch with a delivery rate of 50 μg/h using the 12-h scheme (1000 simulations of 52 subjects). Following this scheme, the subcutaneous administration is continued in the same dose for 6 h after applying the transdermal patch, after which 50 % of the dose is given during an extra 6 h. The simulated solid line represents the median of the simulated data, and the shaded area represents the 80 % prediction interval. The vertical dashed line represents the time of patch application
Critical Review

A Systematic Review of Prospective Studies Reporting Adverse Events of Commonly Used Opioids for Cancer-Related Pain: A Call for the Use of Standardized Outcome Measures

Astrid W. Oosten, Wendy H. Oldemenger, Ron H. J. Mathijsen, and Carin C. D. van der Rijt

The Journal of Pain, Vol 16, No 10 (October), 2015: pp 935-946
Available online at www.jpain.org and www.sciencedirect.com

Figure 2. Incidence rates of nausea, dry mouth, constipation, and drowsiness as the percentage of patients with any grade of the AE per study. Studies are arranged per type of opioid and in ascending order of treatment doses (starting and/or doses after titration). For studies reporting only AEs ascribed to treatment, the dots are circled with a solid black ring or a spotted black ring (probably reporting only AEs ascribed to treatment).
Interventions to reduce professional barriers

- Education
  - Who do we reach?
  - Effect on patients’ pain?

- Pain assessment
  - Integration of pain assessment and evaluation in a pain protocol

- Pain Protocol
  - Only analgesic pain protocol does not work
  - How to implement the protocol?
Pain assessment and pain protocol

Multidimensional cancer-related pain protocol

Step 1: Pain diagnosis
- Yes
  - Assess underlying cause**
  - No

Step 2: Options causal treatment?
- Yes
  - Pain management by treating physician
    - No.
      - Nociceptive pain
        - Art. 1. Paracetamol and/or NSAID
        - Art. 2. Disopyramide IR
          - Diazepam IR
        - If pain ≥ 5
          - Titration of IR and/or analgesics
            - Treatment possible side effects
        - If pain ≥ 5
          - Combination of treatment 3a and 3b
        - If pain ≥ 5
          - Visceral pain in abdomen

Step 3: Symptomatic pain treatment
- Yes
  - Symptomatic pain treatment

Step 4: Pain consult**
- Indication pain consult
  - Inpatients pain ≥ 48 hrs
  - Outpatients pain ≥ 3 visits
  - Pain crisis (NRS 8)
  - Side effect not relieved by treatment
  - Referral with analgesics
    - Indication pain consult
    - Pain consult
    - Combination of treatment 3a and 3b
    - Visceral pain in abdomen
    - Nociceptive pain in spine
    - Neurological deficits
    - Death cause of pain

Step 5: Pain nurse comprehensive pain assessment
- Pain Education
- Distress thermometer
- If pain ≥ 5
To be in pain (or not): a computer enables outpatients to inform their physician

W. H. Oldenmenger1, F. E. Witkamp1, J. E. C. Bromberg2, J. L. M. Jongen2, P. J. Lieverse3, F. J. P. M. Huygen3, M. A. G. Baan1, L. van Zuylen1 & C. C. D. van der Riet1,4

Table 1. Overview of pain registration results in the patients visiting the outpatient departments for the different cancer diagnoses

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>n</th>
<th>Age [mean (SD)]</th>
<th>n (%) Pts with PR</th>
<th>Current PI NRS &gt;0</th>
<th>Current PI NRS &gt;4</th>
<th>Worst PI NRS &gt;0</th>
<th>Worst PI NRS &gt;4</th>
</tr>
</thead>
</table>
To be in pain (or not): a computer enables outpatients to inform their physician

W. H. Oldenmenger¹, F. E. Witkamp¹, J. E. C. Bromberg⁲, J. L. M. Jongen², P. J. Lieverse³, F. J. P. M. Huygen⁳, M. A. G. Baan¹, L. van Zuylen¹ & C. C. D. van der Rijt¹,⁴

Table 1. Overview of pain registration results in the patients visiting the outpatient departments for the different cancer diagnoses

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>N</th>
<th>Sex</th>
<th>Age (mean, SD)</th>
<th>% pain registration</th>
<th>Worst pain NRS &gt; 4</th>
<th>Current pain NRS &gt; 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curative</td>
<td>2142</td>
<td>Male: 1088 (51%)</td>
<td>54 (15)</td>
<td>75%</td>
<td>324 (20%)</td>
<td>227 (14%)</td>
</tr>
<tr>
<td>Palliative</td>
<td>1778</td>
<td>Male: 889 (50%)</td>
<td>60 (13)</td>
<td>82%*</td>
<td>492* (34%)</td>
<td>337* (23%)</td>
</tr>
</tbody>
</table>

*P<0.001

*P<0.001
Reasons for inadequate pain relief

Guidelines Cancer Pain Relief

Effective: 70-90%

- Complex pain problems
- Organisational barriers
- Professional-related barriers
- Patient-related barriers
Patient-related barriers

Most common barriers in patients

- Total Barriers Questionnaire Score
- Concern that increased pain means progression of disease
- Fear of distracting one's physician from treating the disease
- Concerns regarding side-effects
- Desire to be a good patient
- Concerns about tolerance
- Fatalism
- Fear of addiction

Bar graph showing the most common barriers in patients, with bars color-coded for Asian countries and Western countries.

Patient-related barriers

- Hesitate to report pain
- Negative PMI
- Higher levels of pain
- Hesitate to use analgesics
- Only use PRN analgesics

Patients with higher barrier scores

Oldenmenger et al. Eur J Cancer 2009
Patient pain education programs to reduce patient barriers

- Patient Pain Education
- Knowledge ↑ about pain
- ↓ Barriers
- ↑ Adherence
- ↑ Self-efficacy
- ↓ Pain
- ↑ Daily functioning
Patient pain education programs to reduce patient barriers

- **Pain intensity**

  
  ▪ 31% studies significant decrease pain intensity

- **Effect on pain**
  
  - Anderson, 2004
  - Jahn, 2014
  - Koller, 2013
  - Kravitz, 2012
  - Lai, 2004
  - Lin, 2006
  - Lovell, 2010
  - Miaskowski, 2004
  - Oldenmenger, 2011
  - vd Peet, 2009
  - Rustoen, 2012
  - Smith, 2010
  - Syrjala, 2008
  - Thomas, 2012
  - Tse, 2012
  - Vallieres, 2016
  - Ward, 2009_1
  - Ward, 2009_2
  - Ward, 2008
  - Wells, 2003
  - Wilkie, 2010
  - Williams, 2015
  - de Wit, 1997
  - Wright Oliver, 2001
  - Yates, 2004
  - Yildrim, 2009
Patient pain education programs to reduce patient barriers

- Effect pain on daily functioning

33% studies significant increase daily functioning

<table>
<thead>
<tr>
<th>Effect pain</th>
<th>Effect interference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anderson, 2004</td>
<td></td>
</tr>
<tr>
<td>Jahn, 2014</td>
<td></td>
</tr>
<tr>
<td>Koller, 2013</td>
<td></td>
</tr>
<tr>
<td>Kravitz, 2012</td>
<td></td>
</tr>
<tr>
<td>Lai, 2004</td>
<td></td>
</tr>
<tr>
<td>Lin, 2006</td>
<td></td>
</tr>
<tr>
<td>Lovell, 2010</td>
<td></td>
</tr>
<tr>
<td>Miaskowski, 2004</td>
<td></td>
</tr>
<tr>
<td>Oldenmenger, 2011</td>
<td></td>
</tr>
<tr>
<td>vd Peet, 2009</td>
<td></td>
</tr>
<tr>
<td>Rustoen, 2012</td>
<td></td>
</tr>
<tr>
<td>Smith, 2010</td>
<td></td>
</tr>
<tr>
<td>Syrjala, 2008</td>
<td></td>
</tr>
<tr>
<td>Thomas, 2012</td>
<td></td>
</tr>
<tr>
<td>Tse, 2012</td>
<td></td>
</tr>
<tr>
<td>Vallieres, 2016</td>
<td></td>
</tr>
<tr>
<td>Ward, 2009_1</td>
<td></td>
</tr>
<tr>
<td>Ward, 2009_2</td>
<td></td>
</tr>
<tr>
<td>Ward, 2008</td>
<td></td>
</tr>
<tr>
<td>Wells, 2003</td>
<td></td>
</tr>
<tr>
<td>Wilkie, 2010</td>
<td></td>
</tr>
<tr>
<td>Williams, 2015</td>
<td></td>
</tr>
<tr>
<td>de Wit, 1997</td>
<td></td>
</tr>
<tr>
<td>Wright Oliver, 2001</td>
<td></td>
</tr>
<tr>
<td>Yates, 2004</td>
<td></td>
</tr>
<tr>
<td>Yildrim, 2009</td>
<td></td>
</tr>
<tr>
<td>de Wit, 1997</td>
<td></td>
</tr>
<tr>
<td>Wright Oliver, 2001</td>
<td></td>
</tr>
<tr>
<td>Yates, 2004</td>
<td></td>
</tr>
<tr>
<td>Yildrim, 2009</td>
<td></td>
</tr>
</tbody>
</table>
Patient pain education programs to reduce patient barriers

**Knowledge:**
68% studies significant increase in pain-related knowledge

- face-to-face
- monitoring
- written information

<table>
<thead>
<tr>
<th>Effect</th>
<th>Knowledge</th>
<th>Adherence</th>
<th>Self-Efficacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004 Anderson</td>
<td>100%</td>
<td>95%</td>
<td>85%</td>
</tr>
<tr>
<td>2013 Jahn</td>
<td>95%</td>
<td>90%</td>
<td>80%</td>
</tr>
<tr>
<td>2013 Koller</td>
<td>90%</td>
<td>85%</td>
<td>75%</td>
</tr>
<tr>
<td>2012 Kravitz</td>
<td>85%</td>
<td>80%</td>
<td>70%</td>
</tr>
<tr>
<td>2004 Lai</td>
<td>80%</td>
<td>75%</td>
<td>65%</td>
</tr>
<tr>
<td>2006 Lin</td>
<td>75%</td>
<td>70%</td>
<td>60%</td>
</tr>
<tr>
<td>2010 Lovell</td>
<td>70%</td>
<td>65%</td>
<td>55%</td>
</tr>
<tr>
<td>2004 Miaskowski</td>
<td>65%</td>
<td>60%</td>
<td>50%</td>
</tr>
<tr>
<td>2011 Oldenmenger</td>
<td>60%</td>
<td>55%</td>
<td>45%</td>
</tr>
<tr>
<td>2009 vd Peet</td>
<td>55%</td>
<td>50%</td>
<td>40%</td>
</tr>
<tr>
<td>2012 Rustoen</td>
<td>50%</td>
<td>45%</td>
<td>35%</td>
</tr>
<tr>
<td>2010 Smith</td>
<td>45%</td>
<td>40%</td>
<td>30%</td>
</tr>
<tr>
<td>2008 Syrjala</td>
<td>40%</td>
<td>35%</td>
<td>25%</td>
</tr>
<tr>
<td>2012 Thomas</td>
<td>35%</td>
<td>30%</td>
<td>20%</td>
</tr>
<tr>
<td>2012 Tse</td>
<td>30%</td>
<td>25%</td>
<td>15%</td>
</tr>
<tr>
<td>2016 Vallieres</td>
<td>25%</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>2009_1 Ward</td>
<td>20%</td>
<td>15%</td>
<td>5%</td>
</tr>
<tr>
<td>2009_2 Ward</td>
<td>15%</td>
<td>10%</td>
<td>0%</td>
</tr>
<tr>
<td>2008 Ward</td>
<td>10%</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>2003 Wells</td>
<td>5%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2010 Wilkie</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2015 Williams</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>1997 de Wit</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2001 Wright Oliver</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2004 Yates</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2009 Yildirim</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Patient pain education programs to reduce patient barriers

**Adherence:**
Only measured in 6 studies
>50% significant improvement adherence

<table>
<thead>
<tr>
<th>Study</th>
<th>Effect Knowledge</th>
<th>Effect Adherence</th>
<th>Effect Self-Efficacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anderson, 2004</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jahn, 2014</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Koller, 2013</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kravitz, 2012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lai, 2004</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lin, 2006</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lovell, 2010</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miaskowski, 2004</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oldenmenger, 2011</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vd Peet, 2009</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rustoen, 2012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smith, 2010</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Syrjala, 2008</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thomas, 2012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tse, 2012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vallieres, 2016</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ward, 2009_1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ward, 2009_2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ward, 2008</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wells, 2003</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wilkie, 2010</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Williams, 2015</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>de Wit, 1997</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wright Oliver, 2001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yates, 2004</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yildirim, 2009</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Adherence to Analgesics in Oncology Outpatients: Focus on Taking Analgesics on Time

Figure 2. Adherence data. Median adherence for weeks 1 and 2; weeks 3 and 4; and weeks 7 and 8. PEP = Pain Education Program.
Patient pain education programs to reduce patient barriers

 Researchers have explored the effects of pain education programs on various outcomes, including pain interference, knowledge, adherence, and self-efficacy. The chart illustrates the findings from different studies:

- Anderson, 2004
- Jahn, 2014
- Koller, 2013
- Kravitz, 2012
- Lai, 2004
- Lin, 2006
- Lovell, 2010
- Miaskowski, 2004
- Oldenmenger, 2011
- Vd Peet, 2009
- Rustoen, 2012
- Smith, 2010
- Syrjala, 2008
- Thomas, 2012
- Tse, 2012
- Vallieres, 2016
- Ward, 2009_1
- Ward, 2009_2
- Ward, 2008
- Wells, 2003
- Wilkie, 2010
- Williams, 2015
- De Wit, 1997
- Wright Oliver, 2001
- Yates, 2004
- Yildirim, 2009
Further personalize pain treatment

Core principles:

1. Pain education, assessment and management should be personalized

2. Incorporating patient education as an integral part of care
Why are eHealth applications relevant?

- Limited time
- Forget to discuss
- Symptoms have major impact on QoL
- Retrospective symptom assessment
Online symptom monitoring
Experiences of eHealth applications: facilitators

- User friendliness of application
- As addition to face-to-face contact
- Easy access to HCP
- Graphical overview of symptoms
- Access to reliable and personalized information

- Reliable technology - easy to use
- As addition to face-to-face contact
- Direct feedback
- Clear logistics
- Awareness that eHealth can increase efficiency of effectiveness of treatment
Experiences of eHealth applications: barriers

- Symptom registration can be a burden
- Constant reminder of disease
- Overwhelming amount of information
- Older, frail or less educated patients may find it challenging
- Technical challenges

- Increased focus on symptoms
- Believe that current practice is good enough
- Ambiguity about effectiveness
- Older, frail or less educated patients may find it challenging
- Worried about increased workload and cost-effectiveness
# Effect e-Health interventions symptoms

<table>
<thead>
<tr>
<th>Patients</th>
<th>Denis F</th>
<th>Basch E</th>
<th>Strasser F</th>
<th>Berry DL</th>
<th>Oldenmenger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>133</td>
<td>766*</td>
<td>264</td>
<td>752</td>
<td>84</td>
</tr>
<tr>
<td>Intervention</td>
<td>Weekly symptom assessment -summary mail</td>
<td>12 symptoms (CTC) before visit (± home) -Printout visit</td>
<td>All pts symptoms, in clinic -exp gr print</td>
<td>Symptoms in clinic/ home -education &amp; how to talk</td>
<td>Pain monitoring; education; eConsult</td>
</tr>
<tr>
<td>Assessment</td>
<td>Created own symptom score &amp; added 5 ques</td>
<td>CTC-AE</td>
<td>ESAS &amp; ± 10 extra ques</td>
<td>Symptom Distress Scale (15) &amp; 8 ques</td>
<td>Pain intensity &amp; medication adherence</td>
</tr>
</tbody>
</table>

*drop out before first assessment (6 mnth) n=230*
## Effect e-Health interventions symptoms

<table>
<thead>
<tr>
<th>outcomes</th>
<th>Denis F</th>
<th>Basch E</th>
<th>Strasser F</th>
<th>Berry DL</th>
<th>Oldenmenger</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>survival</strong></td>
<td>OS: 19 vs. 12 mnths (P=.001) Better KPS</td>
<td>OS: 31 vs. 26 mnths (p=.03)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>visits</strong></td>
<td>More: 58% vs. 24% (p=.008)</td>
<td>ER: p=.02 hospit.:p=.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>symptoms</strong></td>
<td></td>
<td>Improved: p=.003</td>
<td>SDS-15: p=.02</td>
<td>Decrease pain (p&lt;.001)</td>
<td></td>
</tr>
<tr>
<td><strong>QoL</strong></td>
<td>P=.04</td>
<td>P&lt;.001</td>
<td>NS</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>comments</strong></td>
<td>½ pts able to complete QoL (6 mnt)</td>
<td>Distinction ICT experience</td>
<td>Age &gt;50yrs benefit most (p=.002)</td>
<td>No rct</td>
<td></td>
</tr>
</tbody>
</table>
Overcoming the barriers to pain control

w.h.oldenmenger@erasmusmc.nl