Diagnosis of cancer: the vital role of primary care

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I have no disclosures
The summary of the presentation

• Effective and efficient cancer diagnosis depends on general practice
• GPs are one of the finest ‘diagnostic instruments’ in healthcare
• Patients regard the GP as the most essential doctor
• GPs’ diagnostic work effects the cancer outcome
• Supporting GPs in cancer diagnosis may improve cancer outcome
• But what is the right balance?
Why cancer diagnosis depends on general practice

Public health, resources and clinical risk
Cancer is a growing public health concern

- 30% will get cancer before age 80
- Number of cancer diagnoses doubled in 40 years
- 20% increase next 10 years

NORDCAN, Association of the Nordic Cancer Registries
Albreht et al. Eur J of Cancer 2008;1451–1456
Cancer is a rare, serious disease in general practice

• An average GP will have 10 new cancers per year

• During the same year 1 000s of contacts

• 10 000s of symptoms and sign

Example: Myeloma

• A GP will be involved in **one every 10th year**
• Known to be a “hard to diagnose” cancer – WHY?
• Main symptoms:
  • Fatigue, back pain, infections
• Of all consultations in primary care:
  • Fatigue (10%)
  • Back pain (ca. 8-12%)
  • Infections (15%)

Example: Myeloma

• A GP will be involved in one every 10th year
• Known to be a “hard to diagnose” cancer – WHY?
• Main symptoms:
  • Fatigue, back pain, infections

If not the GP – who else?

• Infections (15%)

General practice and cancer diagnosis

- An easy accessible front-line doctor
- Specialist in managing clinical risk
- Facilitates appropriate use of investigations

Marshall M. NEJM 2015;372:10
Audience activity – ‘unplugged’

- Have a piece of paper
- Quickly, find the nearest person you think you can trust
- Start dating by telling your name
- Then answer this question:

**When you refer a 50-year old patient to be investigated for suspected cancer, what is this patient’s risk of cancer (in %)?**

- Write it on the paper (in %) and give it to your partner
How cancer presents in general practice

Elementary symptom epidemiology
What we lean in medical school...

- You know what cancer it is...
- There are obvious warning signs...
The ecology of medical care - a typical month

The “low risk” setting

The “high risk” setting

The GP is a specialist in the “low risk”- setting

2,000 people during a year

280-380 rectal bleeding during a year

14-30 seeks care

1 colon cancer

When the patient attend you, the risk of colon cancer has already increased with a factor 15

Still, only 1 in 20 (5%) has a colon cancer
The GP must investigate them all

McAvoy BR. MJA. 2007;187:115-7
GPs saw three major types of symptoms

<table>
<thead>
<tr>
<th>Symptom type</th>
<th>% of cancer patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm symptom</td>
<td>50</td>
</tr>
<tr>
<td>Serious but non-specific</td>
<td>20</td>
</tr>
<tr>
<td>Vague or common</td>
<td>30</td>
</tr>
</tbody>
</table>

How do GPs perform in this ‘low-risk’- setting?

“Following this consultation, do you suspect that the patient has a new serious disease?”

- GPs suspected a new serious disease following 6% of consultations
- 10% of these patients got a new serious disease in 2 months

Improve cancer outcome by earlier diagnosis in general practice

Can general practice make a difference?
What is earlier diagnosis of cancer?

• “By timely investigation we wish to diagnose cancer in an earlier stage”
  • Symptomatic presentation (90% of cancers)
  • Screening (5-8% of cancers)
Higher clinical activity – better cancer outcome

- Higher use of/access to investigations → better cancer outcome
  - Colonoscopy
  - Gastroscopy
  - Chest x-ray
  - Use of urgent referrals (fast-track)

Seeing the GP regularly – better cancer outcome

- 124,000 Danish cancer patients
- Consultation rates 19-36 months before diagnosis

Time to diagnosis matters

• With longer diagnostic intervals:
  • Increased mortality
  • Stage progression

Neal RD, et al. BJC 2015;112:s92-s107
While waiting for treatment – the cancer progress

• Stage progression while waiting for treatment
• Therefore also before diagnosis!

Jensen AR, et al. Radiother Oncol. 2007;84:5-10
Chen Z, et al. Radiother Oncol. 2008:87:3-16
Conclusion

• Better cancer outcome seems to be associated with
  • Clinical activity in general practice
  • Seeing the GP
  • Time to diagnosis/treatment
An open diagnostic window in general practice?
- colorectal cancer

Measuring Hgb in general practice

Colon cancer patients - Women

Colon cancer patients - Men

Ref. Colon cancer patient

Colon cancer patients - Women

Colon cancer patients - Men

### The patients value timeliness most

<table>
<thead>
<tr>
<th>Rank</th>
<th>Do you find it important that:</th>
<th>% Very important*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Your family doctor refers you to hospital as quickly as you would like</td>
<td>75</td>
</tr>
<tr>
<td>2</td>
<td>Your treatment is started as soon after the diagnosis as you would like</td>
<td>74</td>
</tr>
<tr>
<td>3</td>
<td>There are regular checks to find new tumours, if your type of cancer is heritable</td>
<td>68</td>
</tr>
<tr>
<td>4</td>
<td>Your doctor consults other doctors or refers you if additional expertise is required</td>
<td>68</td>
</tr>
<tr>
<td>5</td>
<td>The time between first examination and results was short</td>
<td>66</td>
</tr>
<tr>
<td>6</td>
<td>The time between referral by the family doctor and the first examination was less than 6 days</td>
<td>65</td>
</tr>
<tr>
<td>7</td>
<td>You have confidence in the doctors and nurses in the hospital</td>
<td>65</td>
</tr>
<tr>
<td>8</td>
<td>Doctors and nurses in the hospital give you the best possible care</td>
<td>61</td>
</tr>
<tr>
<td>9</td>
<td>You regularly receive information about the effect of the treatment, during the treatment period</td>
<td>57</td>
</tr>
<tr>
<td>10</td>
<td>You receive sufficient information about the (dis-) advantages of different treatments, so you can make a proper choice</td>
<td>56</td>
</tr>
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The patients value timeliness most

One method to develop cancer diagnosis in practice

Beware of over-confidence
GPs - experts in symptoms, - and uncertainty

• Diagnosing cancer is particularly difficult

• A lot of uncertainty in clinical practice

• Pressure from clinical work, patients, society...

• Over-confidence increases the risk of:
  • Cognitive errors
  • Missed diagnosis

Simpkin et al. N Engl J Med 375;18
Malterud K, et al. BJGP 2017;67:244-5
Kostopoulou O. J Health Serv Res Policy 2010;15 Sup1:71-4
Funded by: The Danish Cancer Society

Audience answers

• How many had a realistic partner saying less than 15% risk?
  • Stand up!

• How many had an over-confident partner who said over 15%?
  • Stand up!

• Over 50%?
How confident were 568 Danish GPs?

What is the probability that a 50-year-old patient has cancer when you choose to refer the patient to urgent referral diagnostic services?

<table>
<thead>
<tr>
<th>GPs' anticipated risk of cancer</th>
<th>1-14%</th>
<th>15-24%</th>
<th>25-49%</th>
<th>50-74%</th>
<th>75-100%</th>
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<tbody>
<tr>
<td></td>
<td>20.2</td>
<td>17.4</td>
<td>20.6</td>
<td>28.2</td>
<td>13.6</td>
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Experiences from a system change in Denmark

Access to quick investigation for cancer
A logistic reform of the cancer pathway

- From 2008/9 – GPs could refer urgently if they suspected cancer
- Organ specific pathways/diagnostic centre
- Also introduced in Norway and Sweden

- Higher patient satisfaction
- Shorter diagnostic intervals
- Lower mortality

Change in 1-year cancer survival

**Improvement in 1-year relative cancer survival, NORDCAN**
All sites but non-melanoma skin, breast and prostate cancer, women

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<tr>
<td>Sweden</td>
<td>60%</td>
<td>65%</td>
<td>70%</td>
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<tr>
<td>Norway</td>
<td>55%</td>
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Is this simply lead-time?

- Lead-time bias known from screening:
- A study using real mortality data from before to after urgent referral in Denmark:
- 12% of the survival gain was lead-time

Possible side-effects? How to balance?

- Patient-related (concern, anxiety)?
- Over-diagnosis of the cancer?
- Incidental findings that need follow up?
- Safety-issues?
- Financial issues?

- More multidisciplinary primary care based research on relevant populations

Nicholson BD. Eur J Cancer Care 2017;e12692
Key-messages and what you can do on Monday
Four important adjustments

1. There is no evidence that earlier diagnosis is important
2. Earlier diagnosis is important and time matters
3. Cancer diagnoses are made at hospital
4. Literally all cancer diagnoses start in general practice
5. GPs are not particularly good at diagnosing cancer
6. GPs are better than even the most obvious alarm symptoms
7. The proportion of cancer must be high among referred patients
8. The proportion of cancers must not be too high!
What you can do on Monday

• Remember, you work in a “low-risk” setting – the most difficult setting

• Recognise clinical uncertainty and use it as a respected generalist

• Try to avoid over-confidence

• You have a vital role in cancer diagnosis – patients trust you fulfil it
Thank you for listening

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