UK Cancer in 2025

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What would you want if you had cancer?

- The best chance of cure with good quality of life
- Honest, clear information on available options
- To have the diagnostics fast-tracked in 5 days
- To see the same specialist at every visit
- Convenient, streamlined, focused services as close to home as possible with dedicated car parking
- To be treated in a decent environment as a human being with dignity
- To get the best care possible without worrying about its cost
Cancer services are under increasing pressure

- Demographics and rising incidence
- Increasing patient knowledge and demand
- Better, more sophisticated diagnostics – personalised
- Approval of new drugs – 40 in next 3 years
- New oral regimens just as toxic and given for longer
- Limited capacity to deliver additional chemotherapy – capital, compounding and nursing
- Precision radiotherapy systems but limited capacity – capital, buildings, equipment, staff
Delays in getting to treatment

**Patient**
- Denial and fear
- Education
- Access to doctor

**GP**
- Unusual presentations, rare tumours, co-morbidity masking
- Education
- Access to diagnostics
- Variability in referral rates

**Consultant**
- Inappropriate referral
- Inadequate capacity
- Delays in imaging and biopsy

**System**
- Serial delays common
- No real fast tracking
- Diagnostic under capacity
- Lack of co-ordination and poor IT
**NHS two week wait for suspected cancer**

- Introduced in NHS Cancer Plan 2000
- Only 11% of referrals have cancer – <5% in deprived areas
- 900,000 referrals per year
- NICE guidelines revised 2015

### Routes to diagnosis 2015

<table>
<thead>
<tr>
<th>Route</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two week wait</td>
<td>26%</td>
</tr>
<tr>
<td>Emergency</td>
<td>24%</td>
</tr>
<tr>
<td>GP referral</td>
<td>21%</td>
</tr>
<tr>
<td>Other OP/IP</td>
<td>23%</td>
</tr>
<tr>
<td>Screening</td>
<td>5%</td>
</tr>
<tr>
<td>DCO</td>
<td>1%</td>
</tr>
</tbody>
</table>
All patients with symptoms for more than two weeks to Diagnostic Centre

- GP Referral
- A & E Primary Care
- Nurse Referral
- NHS 111
- Urgent Care Centre

- Self Referral & Charge

- Cancer Likely
- Cancer Uncertain
- Cancer Unlikely

- One Stop Specialist MDT
- Further Investigation
- Follow-Up
- Discharge

- Biopsy
- Bloods
- Tumour Markers
- Endoscopy
- Colposcopy
- Imaging
- US
- CT
- IVD
Extending the network of cancer services

Diagnostic centres

- Palliative and social care
- Symptom control
- Community centres including expanded range of IV infusions and RT
- Radiotherapy and chemotherapy

CANCER CENTRE
Cancer surgery to 2025

- Organ conservation
- Day case and enhanced recovery
- Minimally invasive
- Robotic surgery
- Distance surgery
- Interventional radiology – nanotechnology
- Tailored neo-adjuvant approaches
- Biopsy only for many cancers
- All fast tracked – next day service

2055
- Virtual biopsy
- Robotic biopsy
- Nanotechnology biopsy
- Subsumed into imaging
Radiotherapy to 2025

- Multimedia imaging
- Precise functional anatomy
- Robotic set-up
- Optimised conformal planning
- Biological optimisation
- Designer fractionation
- Combined with ITX

2055

- Local therapy
- Single fraction
- Radiosurgery
- Bulk reduction prior to CT
Current network of CPUK Centres

- **Elekta Datacentre**
  - Mosaiq Server(s)
  - EMR, imaging
  - Pinnacle Server(s)
  - Contouring, planning
  (backup systems)
  (secure data)
  (backup / archive)

- **Backbone**
  - Portsmouth
    - Elekta Synergy + XVI
    - Spire CT & MRI Scanner
    - Spire Chemo

  - Southampton
    - Elekta Synergy + XVI
    - Spire CT & MRI Scanner
    - Spire Chemo

  - Elstree
    - Elekta Synergy + XVI
    - Spire CT & MRI Scanner
    - Spire Chemo

  - Little Aston
    - Elekta Synergy + XVI
    - Spire CT & MRI Scanner
    - Spire Chemo

  - Milton Keynes
    - Elekta Versa HD + XVI
    - CT & mobile MRI
    - Chemo

  - Guildford
    - Elekta Versa HD + XVI
    - BMI CT & MRI Scanner
    - BMI Chemo

  - Portsmouth
    - www
    - Remote access to:
      - Pinnacle TPS
      - Mosaiq EMR

- **Physicist**
- **Dosimetrist**
- **Oncologist**
  - PC, Mac
  - iPad

- **Leased line**
- **1Gbps**
- **100Mbps**
Chemotherapy to 2025

- New molecularly targeted drugs
- Integration of diagnostics
- Control, not eradication, of cancer
- Lifelong therapy with minimal side effects
- Continuous monitoring systems
- Costs high – up to £200,000 pa

2055
- 95% cancer controllable
- Age related rationing
- Qol determines therapy
# Molecular diagnostics in cancer

<table>
<thead>
<tr>
<th>Diagnostic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Predisposition screen</td>
<td>• Identify patients for chemo – prevention</td>
</tr>
<tr>
<td>• Screen for presence of cancer</td>
<td>• Increase in earlier disease</td>
</tr>
<tr>
<td>• Pharmacodynamic biomarker</td>
<td>• Establish pharmacological dose</td>
</tr>
<tr>
<td>• Surrogate marker of clinical efficacy</td>
<td>• Early proof of concept</td>
</tr>
<tr>
<td>• Predictive reclassification of disease</td>
<td>• Target therapy to those likely to respond</td>
</tr>
<tr>
<td>• Patient-specific toxicity prediction</td>
<td>• Avoid adverse events, adjust dose</td>
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Providing care in 2025

Cancer - a chronic, controllable illness

- Health Departments as regulators and purchasers
- 200 cancer diagnostic centres and 100 cancer care delivery centres - Dx and Rx in 5 days
- Personalised medicine using sophisticated diagnostics
- Concepts of total care and compressed morbidity
- Informed consumers not patients
- Empowering, caring and efficient integration
- Healthcare, insurance, pharmaceutical, academic partnerships create novel vehicles
- Achieving the therapeutic plateau and no more