ALLIED HEALTH PROFESSIONS

**Cancer care toolkit**

How AHPs improve patient care and save the NHS money >

Maximising allied health professionals’ contribution to the delivery of high quality and cost effective patient care.

A GUIDE FOR HEALTHCARE COMMISSIONERS

This toolkit is one of a series of toolkits developed by NHS London on behalf of the Strategic AHP Leads Group (SAHPLE)

Art, Music and Drama Therapists
Diagnostic radiographers
Dietitians
Lymphoedema practitioners
Occupational therapists
Orthoptists
Podiatrists
Prosthetists and orthotists
Speech and Language Therapists
Therapeutic radiographers

Click to enter toolkit

pre-diagnosis assessment and diagnosis treatment survivorship
Opening narrative

Allied Health Professions (AHPs) are proactively supporting initiatives and service redesign which is evidence based and addresses the QiPP (Quality, Innovation, Productivity and Prevention) agenda.

The Strategic Health Authorities Allied Health Professional Leads (SAHPLE) commissioned a project to identify clinical pathways where AHPs make a significant difference to the clinical outcomes for patients including those suffering from cancer.

AHPs include a number of professions who work as independent practitioners. AHPs support and/or treat cancer patients throughout the cancer pathway from pre-diagnosis through to survivorship. They support cancer patients not only to recover from the physical changes that may accompany their illness or as a result of the cancer related treatment but they also help the service users to function in everyday activities and reach their goals for optimum physical health.

Rehabilitation is an essential part of a cancer pathway and overarches the whole pathway from pre-diagnosis to end of life care. This pathway focusses on the AHP contribution from pre-diagnosis to survivorship and does not cover palliative and end of life care. Almost all cancer patients will require rehabilitation along their cancer pathway (Allied Health professionals in cancer care: An evidence review, Macmillan Cancer Support, November 2011, Supporting and Improving commissioning of cancer rehabilitation services, National Cancer Action Team, November 2009).

AHPs have a significant role to play in promoting a healthy lifestyle in the prevention of symptoms which may lead to cancer. This is not covered in detail within this document.

For further information please contact:
Lesley Johnson
SHA Allied Health Professions Lead
NHS London
Southside
105 Victoria Street
London SW1E 6QT
Lesley.Johnson@london.nhs.uk

The key AHP professions that are involved in a cancer care pathway include:

- **Art, Music and Drama Therapists** – work with cancer patients and utilise both the psychological and social potentials of the arts to support patients with a wide range of physical, communication and mental health issues.
- **Dietitians** – Specialise in the nutritional assessment of cancer patients, which together with other clinical information is used to provide dietary treatment. Malnutrition is the single most common secondary diagnosis in patients with cancer. Dietitians advise on achieving optimal nutritional status, improve nutrition throughout the cancer patient’s journey and minimise discomfort through appropriate nutritional support.
- **Diagnostic Radiographers** – employ a range of techniques to produce high quality images to diagnose an injury or disease including cancer. Responsible for providing safe and accurate high quality imaging examinations and are increasingly involved in providing first line reporting results. Diagnostic radiographers are also key members of the breast screening programme.
- **Lymphoedema Practitioners** – a health professional (predominantly nurses, physiotherapists and occupational therapists) who has specialist post-graduate training in the prevention and management of lymphoedema. Lymphoedema practitioners provide support and give advice to both patients and professionals, obtain and disseminate lymphoedema information and provide lymphoedema patients with a standard of care which is recognised by the British Lymphology Society, working alongside the recommendations of the International Lymphoedema Framework Project.
- **Occupational Therapists** – assist the patient and carers to maintain their maximum level of function and independence. They are involved with the care of patients who have problems with functional ability, stress or physical discomfort as a result of cancer and symptom management as well as having a pivotal role in vocational rehabilitation.
- **Orthoptists** – assess, diagnose and treat eye movement defects due to cancer as well as other clinical conditions.
- **Physiotherapists** – help maximise the patient’s potential in terms of functional ability and independence as well as gain relief from distressing symptoms. The physiotherapist will provide a range of therapies for physical disability and pain.
- **Podiatrists** – provide assessment, evaluation and foot care for a wide range of patients with a variety of long term and acute conditions.
- **Prosthetists and orthotists** – prosthetists are able to design, select and fit the most appropriate prosthesis for each patient on an individual basis. Orthotists assess, fit and provide patient education for patients requiring orthotic support.
- **Speech and Language Therapists** – specialise in the diagnosis and treatment of patients who have speech, language and or swallowing problems as a result of cancer. They are also involved in the teaching of alternative methods of communication and symptom management.
- **Therapeutic radiographers** – play a vital role in the radiation therapy treatment of cancer. They help plan and deliver radiotherapy along with medical physicists. Therapy radiographers manage the patient pathway through the many radiotherapy processes, providing care and support for patients throughout their radiotherapy treatment.

National Cancer Action Team, Supporting and Improving Commissioning of Cancer Rehabilitation Services Nov 2009
AHP Federation www.ahpf.org.uk >

Macmillan Cancer Support: Specialist Lymphoedema Services: An Evidence Review August 2011

Endorsements

Introduction
What does this toolkit do for you?

This toolkit has been developed by a range of clinicians working in cancer. The information has been provided by a national collaboration of clinicians in conjunction with their professional bodies and is based on available research evidence.

This work has been reviewed by a range of specialists including the National Cancer Action Team, and the professional bodies for each of the Allied Health Professional disciplines. The toolkit has been endorsed by the Professional Bodies.

This toolkit provides information on the following:

• Which interventions most positively benefit patient care
• What range of interventions over time will reap the most benefits during illness and lead to independence
• How do the interventions match to the NHS Outcomes Framework and the Improving Outcomes: a strategy for cancer (Jan 2011)
• Which interventions are able to save money to the system
• How is the functional ability of patients enabled by using Allied Health Professionals (AHPs).

Audience

This information is aimed at those involved in commissioning or developing cancer services.

The toolkit will provide an interactive method of ensuring that patient care is meeting quality standards and providing essential elements of the QIPP agenda.

If you are looking to re-design or provide cancer services this information will assist you to meet the needs of your local population.

Contents

1. List of interventions by Allied Health Profession
2. A pathway graphic highlighting where each profession significantly contributes to value-for-money high quality care
3. QIPP (Quality, Innovation, Productivity and Prevention) – key facts and golden nuggets
5. Research evidence
6. Case studies
7. References

We hope you find it valuable.
## Common symptoms by cancer site by professional expertise (1 of 3)

<table>
<thead>
<tr>
<th>Presenting condition/symptoms</th>
<th>Professional involvement</th>
<th>Breast</th>
<th>Brain</th>
<th>Colorectal</th>
<th>Gynae</th>
<th>Haematology</th>
<th>Head and neck</th>
<th>Lung</th>
<th>Sarcoma</th>
<th>Skin</th>
<th>Urology</th>
<th>Upper GI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altered body image</td>
<td>Art, Music and Drama Therapist, Occupational Therapist, Orthotist and prosthetist</td>
<td>★</td>
<td></td>
<td>★</td>
<td></td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>Amputation of limb</td>
<td>Occupational Therapist, Orthotist and prosthetist, Physiotherapist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td></td>
<td>★</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anorexia/cachexia</td>
<td>Dietitian</td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breathlessness</td>
<td>Occupational Therapist, Physiotherapist</td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td>★</td>
<td></td>
<td>★</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication difficulties/disorders</td>
<td>Speech and Language Therapist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td>★</td>
<td>★</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continence</td>
<td>Occupational Therapist, Physiotherapist</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td></td>
<td></td>
<td>★</td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td>★</td>
</tr>
</tbody>
</table>
## Common symptoms by cancer site by professional expertise (2 of 3)

<table>
<thead>
<tr>
<th>Presenting condition/symptoms</th>
<th>Professional involvement</th>
<th>Breast</th>
<th>Brain</th>
<th>Colorectal</th>
<th>Gynae</th>
<th>Haematology</th>
<th>Head and neck</th>
<th>Lung</th>
<th>Sarcoma</th>
<th>Skin</th>
<th>Urology</th>
<th>Upper GI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dysphagia</strong></td>
<td>Diagnostic Radiographer</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td></td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td></td>
<td>★</td>
</tr>
<tr>
<td></td>
<td>Dietitian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Speech and Language Therapist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Exercise and physical well being</strong></td>
<td>Occupational Therapist</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td></td>
<td>Physiotherapist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td><strong>Fatigue and energy management</strong></td>
<td>Art, Music and Drama Therapist</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td></td>
<td>Dietitian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Occupational Therapist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physiotherapist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Therapeutic Radiographer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lymphoedema</strong></td>
<td>Lymphoedema Practitioners</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td></td>
<td>Occupational Therapist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physiotherapist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Metastatic Spinal Cord Compression</strong></td>
<td>Occupational Therapist</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td></td>
<td>Physiotherapist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td>★</td>
</tr>
</tbody>
</table>
# Cancer rehabilitation

## Common symptoms by cancer site by professional expertise (3 of 3)

<table>
<thead>
<tr>
<th>Presenting condition/symptoms</th>
<th>Professional involvement</th>
<th>Breast</th>
<th>Brain</th>
<th>Colorectal</th>
<th>Gynae</th>
<th>Haematology</th>
<th>Head and neck</th>
<th>Lung</th>
<th>Sarcoma</th>
<th>Skin</th>
<th>Urology</th>
<th>Upper GI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility and loss of function</td>
<td>Occupational Therapist</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td></td>
<td>Physiotherapist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Podiatrist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutritional status/dietary advice/malnourishment</td>
<td>Dietitian</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>Pain</td>
<td>Art, Music and Drama Therapists</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td></td>
<td>Occupational Therapist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physiotherapist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respiratory function</td>
<td>Diagnostic Radiographer</td>
<td>★</td>
<td></td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td></td>
<td>Physiotherapist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of visual function</td>
<td>Orthoptist</td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Occupational Therapist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Commissioning principles: which AHPs do you need? Page 1 of 4

Commissioners may not presently know how to maximise the use of a range of AHPs to add to patient benefit and the QIPP agenda. This toolkit illustrates the logic and clinical argument around onward referral to multi-disciplinary AHP teams and outlines appropriate use of AHP professions so that patient quality is enhanced and independence wherever possible is gained.

**AHPs are not optional but integral to the necessary treatment of patients. There are clinical and financial risks in patients not receiving AHP input.**

This toolkit aims to show what the appropriate response is to a presenting condition and how a range of AHPs work together to reach the outcomes aspired to in the National Outcomes Framework.

<table>
<thead>
<tr>
<th>Presenting condition</th>
<th>Health risk</th>
<th>Referral to</th>
<th>Risk mitigated</th>
<th>Outcome Framework domain (download)</th>
<th>Improving outcomes: a strategy for cancer (link)</th>
</tr>
</thead>
</table>
| Altered body image   | A wide range of cancer problems (e.g. tumour, treatment and treatment delivery systems) cause alterations in body image for patients. Individuals’ sense of self-worth and sexuality is bound up with appearance, function and control of their bodies. | Occupational therapist  
Art, music and drama therapist  
Orthotist and prosthetist  
Therapeutic radiographer  
Diagnostic radiographer | AHPs with appropriate levels of psychological training will reduce the need for more costly alternatives and time delays associated with onward referrals to limited available services. | 2,3   | 2                                      |
| Amputation of limb    | Established amputee unable to continue to engage in occupational or social activities. Management of patient expectations needed. Fast revisions and repairs not provided. Missed appointments through illness | Physiotherapist  
Occupational therapist  
Orthotist and prosthetist  
Podiatrist | Inability to undertake daily activities and live as independently as able. | 2,3,4,5 | 2,5,                                      |
| Anorexia cachexia and nutritional status, dietary advice, malnourishment | Malnutrition  
Inadequate nutritional regime whilst undergoing chemotherapy  
Swallowing difficulty, possible aspiration and pneumonia  
Reduced mobility due to compromised physical strength  
Further weight loss  
Falls  
Lack of capacity to continue treatment  
Difficulties with routine self-care  
Self-confidence reduced. | Dietitian  
Speech and language therapist  
Occupational therapist | Fatigue and low energy levels. Unable to undertake daily activities. Poor mobility and muscle strength. Dehydration. Choking and aspiration pneumonia Malnutrition. | 2,3   | 1,2,3,5                                    |
| Breathlessness and respiratory function | Anxious or panicky. Patient tries to breathe more quickly, and starts to take shallower breaths exacerbating the breathlessness. Patient starts to use their shoulders and upper chest muscles to help them breathe. Tiredness, Fatigue | Physiotherapist  
Occupational therapist  
Diagnostic radiographers often asked to take chest x-ray examination | Chest infections. Weakened muscles. Pain. | 2   | 2,5                                      |

Click this link to find out how AHPs save the NHS money, and the evidence and case studies that support claims about the benefit of their interventions.
Commissioning principles: which AHPs do you need?

Commissioners may not presently know how to maximise the use of a range of AHPs to add to patient benefit and the QIPP agenda. This toolkit illustrates the logic and clinical argument around onward referral to multi-disciplinary AHP teams and outlines appropriate use of AHP professions so that patient quality is enhanced and independence wherever possible is gained.

**AHPs are not optional but integral to the necessary treatment of patients. There are clinical and financial risks in patients not receiving AHP input.**

This toolkit aims to show what the appropriate response is to a presenting condition and how a range of AHPs work together to reach the outcomes aspired to in the National Outcomes Framework.

<table>
<thead>
<tr>
<th>Presenting condition</th>
<th>Health risk</th>
<th>Referral to</th>
<th>Risk mitigated</th>
<th>Outcome Framework domain (download)</th>
<th>Improving outcomes: a strategy for cancer</th>
</tr>
</thead>
</table>
| Communication difficulties/ disorders    | Social isolation and inability to express anxiety through words, either for emotional reasons or as a result of lost speech from laryngectomy, glossectomy, tracheostomy or cognitive impairment. Feelings of loss of social identity. Clinical depression. | Dietitian  
Physiotherapist  
Occupational therapist  
Speech and language therapist  
Art, music and drama therapists | Increased dependence on state benefits due to work skills being lost and social isolation increased. Involvement in Mental Health services. Carer responsibility increases and may have to give up work. | 2,3,4,5  
2,3,5 | 2,3,5                                    |
| Continence                               | Distress.  
Anxiety.                                                                 | Physiotherapist  
Occupational therapist | Incontinence.  
Urinary tract infections.  
Social isolation for fear of going out possibly leading to depression and low mood. | | |
| Dysphagia                                | Compromised swallow.  
Malnutrition, weight loss.  
Increased isolation.  
Pneumonia.  
Staff in nursing homes lacking knowledge of how to provide optimum support.  
Swallowing issues leading to aspiration.  
Malnutrition/Weight loss.  
Aspiration, Pneumonia. | Speech and language therapist  
Dietitian  
Diagnostic radiographer | Chest infection.  
Pneumonia.  
Malnutrition.  
Fatigue, tiredness and weight loss. | 2,5 | 2 |
| Exercise and physical well being         | Tiredness.  
Anxiety.  
Low mood.  
Depression.  
Reduced muscle strength.  
Sleep disturbance.  
Poor appetite.  
Reduced movement.  
Pain. | Physiotherapist  
Occupational therapist | Poor physical fitness, low energy levels, poor muscle strength, limited coordination and balance.  
Lymphoedema.  
Risk of injuries. | 2 | 2,5 |

Click this link to find out how AHPs save the NHS money, and the evidence and case studies that support claims about the benefit of their interventions.
### Commissioning principles: which AHPs do you need?

Commissioners may not presently know how to maximise the use of a range of AHPs to add to patient benefit and the QIPP agenda. This toolkit illustrates the logic and clinical argument around onward referral to multi-disciplinary AHP teams and outlines appropriate use of AHP professions so that patient quality is enhanced and independence wherever possible is gained.

**AHPs are not optional but integral to the necessary treatment of patients. There are clinical and financial risks in patients not receiving AHP input.**

This toolkit aims to show what the appropriate response is to a presenting condition and how a range of AHPs work together to reach the outcomes aspired to in the National Outcomes Framework.

#### Table: Presenting condition, Health risk, Referral to, Risk mitigated

<table>
<thead>
<tr>
<th>Presenting condition</th>
<th>Health risk</th>
<th>Referral to</th>
<th>Risk mitigated</th>
<th>Outcome Framework domain (download)</th>
<th>Improving outcomes: a strategy for cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatigue and energy management</td>
<td>Difficulty doing the smallest chores – even everyday activities like brushing hair, showering or cooking can seem impossible. A feeling of having no energy or strength to do anything. Lack of concentration. Having trouble thinking, speaking, or making decisions. Difficulty remembering things. Feeling breathless after only light activity. Dizziness or a feeling of light-headedness. Difficulty sleeping (insomnia). Loss of sex drive. Feeling more emotional than usual.</td>
<td>Physiotherapist, Occupational therapist, Dietitian, Art, music and drama therapist, Therapeutic radiographer</td>
<td>Anaemia. Pain. Anxiety. Depression. Fatigue.</td>
<td>2</td>
<td>2,5</td>
</tr>
<tr>
<td>Lymphoedema</td>
<td>Swelling of the area – clothing, shoes or jewelry (rings or watches) may feel tighter than usual. Change in feeling – the limb or area may feel heavy, tight, full or stiff. Skin in the area may feel tight, stretched and sometimes the texture can feel thicker. Skin may also be dry, flaky, rough or scaly. Aching in the affected area.</td>
<td>Lymphoedema practitioners, Physiotherapist, Occupational therapist</td>
<td>Poor movement. Breathing problems. Dry and itchy skin which may lead to infection.</td>
<td>2</td>
<td>1,2,5</td>
</tr>
<tr>
<td>Metastatic Spinal Cord Compression</td>
<td>Back pain. Loss of sensation. Numbness. Potentially prolapsed spine and paralysis with subsequent morbidity. Constipation. Problems passing urine. Irreversible damage to CNS and reduced mobility, permanent paralysis, and potential loss of function below tumour site, which could lead to urine incontinence, impaired sensation and touch with cost implications for future patient welfare and care, for physical and mental health issues. Skin damage and discomfort through irradiation.</td>
<td>Physiotherapist, Occupational therapist, Therapeutic radiographer, Orthotist</td>
<td>Limited mobility. Pain. Bowel and bladder symptoms.</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Click this link to find out how AHPs save the NHS money, and the evidence and case studies that support claims about the benefit of their interventions.
**Commissioning principles: which AHPs do you need?**

Commissioners may not presently know how to maximise the use of a range of AHPs to add to patient benefit and the QIPP agenda. This toolkit illustrates the logic and clinical argument around onward referral to multi-disciplinary AHP teams and outlines appropriate use of AHP professions so that patient quality is enhanced and independence wherever possible is gained.

**AHPs are not optional but integral to the necessary treatment of patients. There are clinical and financial risks in patients not receiving AHP input.**

This toolkit aims to show what the appropriate response is to a presenting condition and how a range of AHPs work together to reach the outcomes aspired to in the National Outcomes Framework.

<table>
<thead>
<tr>
<th>Presenting condition</th>
<th>Health risk</th>
<th>Referral to</th>
<th>Risk mitigated</th>
<th>Outcome Framework domain (download)</th>
<th>Improving outcomes: a strategy for cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility and loss of function</td>
<td>General health and well-being compromised. Increasing isolation. Increased dependence on others. Undetected cancer which is progressing. Loss of function. Red flag symptoms undetected.</td>
<td>Physiotherapist Occupational therapist Podiatrist</td>
<td>Poor muscle strength, movement and reduced mobility.</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Pain</td>
<td>Patients experiencing radiotherapy. Skin maintenance and functional well-being needs following radiation therapy. Distress and anxiety. Undetected cancer which is progressing. Loss of function. Red flag symptoms undetected.</td>
<td>Lymphoedema practitioners Physiotherapist Occupational therapist</td>
<td>Poor movement. Breathing problems. Dry and itchy skin which may lead to infection.</td>
<td>2</td>
<td>1, 2, 5</td>
</tr>
<tr>
<td>Loss of visual function</td>
<td>Deterioration in functional mobility, skills and occupational and social engagement. Risk of preventable falls occurring. Inappropriate timing of neurosurgical treatment.</td>
<td>Orthoptist Occupational therapist</td>
<td>Undetected identification of low vision or visual field loss of specific types impacts on delayed identification of conditions such as choroidal melanoma, optic nerve meningioma or pituitary adenoma. Lost opportunity to identify red flag indicators of CNS pathology directly indicates the area of CNS involvement. Papilloedema indicates raised intracranial pressure which is common in CNS cancer. Diagnosis of cranial nerve and gaze palsy – conditions often linked to CNS cancer such as pinealoma and meningioma. Missed opportunity for timely referral to visual support agencies.</td>
<td>1, 2, 5</td>
<td>1, 2, 5</td>
</tr>
</tbody>
</table>

Click this link to find out how AHPs save the NHS money, and the evidence and case studies that support claims about the benefit of their interventions.
Benefits of AHP input: pre-diagnosis stage

AHPs’ contributions at the pre-diagnosis stage.

**Diagnostic radiographers**
Diagnostic radiographers are essential in screening programmes. A total of 14,229 breast cancers from women aged 45 and over were detected by the breast screening programme in 2009/10.

41.6% (5,913) of all cancers were invasive but small (less than 15mm) and therefore usually too small to detect by hand. Screening for bowel, prostate cancer. They are also very involved in excluding malignancies especially with CT/MRI.

*NHS Information Centre, 2011*
Download Breast Screening Programme, England 2009–10 >
All Diagnostic Radiographers use a range of imaging modalities: x ray, CT, PET CT, ultrasound, MRI, and nuclear medicine procedures to screen high risk groups and monitor cancer patients.

Advanced Practitioners in sonography can release radiology time. The quality of reporting is at an expert level.

Fine needle biopsies using contrast agents to define tumour status are an effective method of identifying abnormalities with a high level of accuracy leading to diagnosis. This technique is less costly and more easily accessible than MRI or CT.

Published 2009 The Society and College of Radiographers
Download The Scope of Practice 2009 >
Scope of Radiographic Practice 2008: A report compiled by the University of Hertfordshire in collaboration with the Institute for Employment Studies for the Society and College of Radiographers. Published 2008 The Society and College of radiographers. Download here >

Education and Professional Development: New Directions. Published 2010. The Society and College of Radiographers. Download here >

**Dietitians**
Dietitians play a major role in reducing obesity as a significant risk factor in the cause of cancer.

**Key fact**
8.7% of breast cancer cases are attributable to overweight and obesity and this rises to 24% in oesophageal cancers.


People with cancer are at high risk of nutritional depletion because of the physical and psychological effects of both the disease and its treatment.

**GOLDEN NUGGET**

Dietetic involvement
About 40% of cancer patients have been found to have significant protein – energy malnutrition. In cancer patients, undernutrition may have implications for cancer treatment. Chemotherapy dosages are based on body weight so optimum dosages may not be given. Dietitians prevent and correct nutritional depletion in order to maintain physical strength and quality of life for as long as possible.


**Orthoptists**
Provide optical surveillance and specialist screening which ensures that red flag cancer symptoms are detected.

**GOLDEN NUGGET**

Faster onward referral leads to better outcomes especially for vulnerable groups such as patients with Learning Disability/Mental Health issues who have lower reporting of symptoms.

**Podiatrists**
Advice on skin care and sun awareness can help prevent/reduce skin cancers. Podiatrists advise patients with regard to foot and leg care.

**Speech and language therapists**
As specific cancer symptoms emerge undertake swallowing and communication assessment.

**Orthoptists**
Provide optical surveillance and specialist screening which ensures that red flag cancer symptoms are detected.

**GOLDEN NUGGET**

Faster onward referral leads to better outcomes especially for vulnerable groups such as patients with Learning Disability/Mental Health issues who have lower reporting of symptoms.

**Podiatrists**
Advice on skin care and sun awareness can help prevent/reduce skin cancers. Podiatrists advise patients with regard to foot and leg care.

**Speech and language therapists**
As specific cancer symptoms emerge undertake swallowing and communication assessment.
AHPs’ contributions at the assessment/diagnosis stage.

**Art therapists**
Art therapy enables cancer patients to express anxiety about their cancer diagnosis and this will help prevent the onset of depression with associated pharmacological costs, and reliance on social care.


*Psycho-Oncology (2010). Published online in Wiley InterScience. DOI: 10.1002/pon.1722. Download here >*

Art therapy enables cancer patients to express anxiety about their cancer diagnosis and this will help prevent the onset of depression with associated pharmacological costs, and reliance on social care.

**Diagnostic radiographers**
Diagnostic radiographers undertake x-ray examinations including mammograms, and CT scans. They also perform MRI scans, ultrasound scans, PET scans and other Nuclear Medicine procedures and all patients see diagnostic radiographers as a key member of the assessment/diagnosis stage.

*Medical Image Interpretation by Radiographers. Definitive Guidance, Society of Radiographers, 2010. Download here >*

**Key fact**
Advanced practice in radiography may lead to a release of time within radiology departments for doctors and results in quicker reporting leading to better health outcomes for patients.

*GoLDEN NUGGET*

**37% reduction in costs**
Clinic costs have been reduced by 37% by having a radiographer and speech and language therapist versus a consultant radiologist and speech and language therapist.

*Stroke pathway – delivering through improvement. See NHS Evidence website >*

**Dietitians**
Dietitians provide nutritional assessments in preparation for the patient under-going cancer treatments

Appropriate nutritional screening and timely intervention can limit weight loss. This potentially has direct cost benefits both financially and in terms of the quality of life of the patient and carers.

*GoLDEN NUGGET*

**£226m saving**
A five day reduction in length of stay, from 15 days to 10 days, as a result of minimising malnutrition provides an annual saving of £266 million.

*A positive approach to nutrition and treatment Kings Fund 1992.*

*Use of SPARC tool*
This has been used to identify that 35% of patients were malnourished.

**Active treatment gains**
A study over a six week period found that the cost of active treatment including the use of specialised hosiery and short stretch bandages was cheaper than traditional maintenance treatment with bandages and dressings. This active treatment cost £1,162 over the six week period, traditional treatment was more than double at £3,160.

*Activa Healthcare.*

**Lymphoedema practitioners**
Assess physical movements to improve and manage the impact of any treatments (surgical/radio/chemotherapy) and optimise recovery time: coordination, mobility, balance, range of movement, strength and function.

*GoLDEN NUGGET*

**Reducing admissions**
For every £1 spent on lymphoedema treatments the service estimates that, by limiting swelling and preventing damage and infection, the NHS saves £100 in reduced hospital admissions.


**Key fact**
Advice about restricting shoulder movement in the first seven days following mastectomy for breast cancer can reduce the incidence of lymphoedema by 19%.

*GoLDEN NUGGET*

**Active treatment gains**
A study over a six week period found that the cost of active treatment including the use of specialised hosiery and short stretch bandages was cheaper than traditional maintenance treatment with bandages and dressings. This active treatment cost £1,162 over the six week period, traditional treatment was more than double at £3,160.

*Activa Healthcare.*
AHPs’ contributions at the assessment/diagnosis stage.

**Benefits of AHP input:**

**Assessment/diagnosis stage**

**Key fact**

Reducing dependency levels by promoting self-care should reduce costs associated with social/residential care needs and wider societal costs.

The introduction of fatigue management strategies in advance of radiotherapy can reduce the burden of care/social support and need for hospital admission.

Optimise quality of life through review of activities of daily living and goal setting.

Discuss lifestyle adjustment including role loss and self-esteem.

Assess and support patient to carry out personal care and domestic activities.

Provide support to enable continued attendance at work as indicated by the patient.

Provision of emotional support to patient and family to deal with symptoms, body image issues, life changes etc. with basic counselling skills as required.

**Occupational therapists**

Secondary to a pineocytoma. Occupational therapists work with ophthalmologists to enable patients with red flag cancer symptoms to be fast tracked for referral for treatment, which improves prognosis or speeds provision of palliative care in poor prognosis.

Pre-diagnosis >

Assessment/diagnosis >

Treatment >

Survivorship >

**Orthoptists**

Patients undergoing treatment for breast cancer including the 23 hour breast pathway will need physiotherapy input for advice and exercise on arm movement to ensure they are prepared for radiotherapy.

Advice from physiotherapists and lymphoedema practitioners at this stage can help prevent other complications such as seroma, axillary web syndrome and lymphoedema.

**Podiatrists**

A patient waiting for elective surgery may see a prosthetist to determine the type and level of need. This will help the patient to acclimatise to future change more quickly.

**Physiotherapists**

Patients undergoing treatment for breast cancer including the 23 hour breast pathway will need physiotherapy input for advice and exercise on arm movement to ensure they are prepared for radiotherapy.

Advice from physiotherapists and lymphoedema practitioners at this stage can help prevent other complications such as seroma, axillary web syndrome and lymphoedema.

Advice from physiotherapists and lymphoedema practitioners at this stage can help prevent other complications such as seroma, axillary web syndrome and lymphoedema.

**Prosthetists**

A patient waiting for elective surgery may see a prosthetist to determine the type and level of need. This will help the patient to acclimatise to future change more quickly.

**Speech and language therapists**

Speech and language therapists lead videofluoroscopy of swallow. Videofluoroscopy is used for the assessment and management of oropharyngeal swallowing disorders.


GOLDEN NUGGET

£4m potential savings

At Glasgow Royal Infirmary clinic costs were reduced from £345 (consultant radiologist + speech therapist) to £215 (radiographer + speech therapist). At five videofluoroscopy clinics per week the annual saving for the hospital was 5 x £130 x 52 = £33,800. There is potential for national annual savings to the NHS of £4.191 million.

Stroke pathway – delivering through improvement.

See NHS Evidence website >

**Key fact**

The effect of pre-treatment exercises in relation to swallowing and mouth opening after concomitant chemoradiotherapy reduced the extent and severity of these functional problems.


GoLDEN NUGGET

**£4m potential savings**

At Glasgow Royal Infirmary clinic costs were reduced from £345 (consultant radiologist + speech therapist) to £215 (radiographer + speech therapist). At five videofluoroscopy clinics per week the annual saving for the hospital was 5 x £130 x 52 = £33,800. There is potential for national annual savings to the NHS of £4.191 million.

Stroke pathway – delivering through improvement.

See NHS Evidence website >

**Key fact**

The effect of pre-treatment exercises in relation to swallowing and mouth opening after concomitant chemoradiotherapy reduced the extent and severity of these functional problems.

Benefits of AHP input: treatment stage

AHPs’ contributions at the treatment stage.

### Art therapists

#### Key fact

The flexibility of art therapy is an important feature in the planning of innovative, supportive interventions for cancer patients at different stages of illness including in palliative care. Art therapy contributes to the quality of the patient’s experience in supporting pain management and symptom relief.

Individual art therapy provided by a trained art therapist in a clinical setting is beneficial in patients undergoing radiotherapy, as it has been shown to improve coping resources.

Art therapy improves coping resources. A randomized, controlled study among women with breast cancer. 

*Oster, C. W., Martignetti, A., & González, J.*

Palliative and Supportive Care 2015, 7(4), 367–374.

Cancer patients undergoing painful treatments and procedures who took part in individual art therapy sessions reported a reduction of distress and anxiety. Patient experience would be very much enhanced as a result.


Patients who see an art therapist during their chemotherapy sessions perceived art therapy as helpful, and so improved patient quality of experience.


Art therapy may be helpful even with patients who are physically restrained in their movements and lacking energy and motivation. The flexibility of art therapy is an important feature in the planning for innovative supportive interventions for cancer patients at different stages of their illness.

*Art therapy with cancer patients during chemotherapy sessions: An analysis of the patients’ perception of helpfulness.*

Silvia Forzoni, dipl. a.t., Michela Perez, m. a. psych., Angelo Martignetti, m.d., and Sergio Crispino, m.d.

Palliative and Supportive Care (2010), 8, 41–48. Cambridge University Press.

At follow-up following art therapy, significant lower ratings of depression, anxiety, and somatic symptoms and fewer general symptoms were reported for the art therapy group compared to the control group. The conclusion suggests that art therapy has a long-term effect on the crisis following the breast cancer and its consequences.

Individual brief art therapy can be helpful for women with breast cancer: A randomized controlled clinical study.


Palliative and Supportive Care (2010), 8, 41–48. Cambridge University Press.

At follow-up following art therapy, significant lower ratings of depression, anxiety, and somatic symptoms and fewer general symptoms were reported for the art therapy group compared to the control group. The conclusion suggests that art therapy has a long-term effect on the crisis following the breast cancer and its consequences.

Lymphoedema practitioners

#### Key fact

A group of melanoma survivors who had complete decongestive physical therapy for lower extremity secondary lymphoedema found this intervention resulted in an improvement in quality of life and a reduction in limb circumference even after one year post discharge.

Carmeli E, Bartoletti R. (2011), Retrospective trial of complete decongestive physical therapy for lower extremity secondary lymphoedema in melanoma patients, Supportive Care in Cancer 19: 141-147.

The use of low level laser therapy in the management of post mastectomy lymphoedema has been shown to reduce arm volume and increase tissue softening.

AHPs’ contributions at the treatment stage.

**Dietitians**

**Key fact**

The costs of early nutritional care are low, especially in frail malnourished patients.


**Key fact**

It is essential that all members of the healthcare team are aware of the need to look for and identify emerging nutritional problems so that they can be rectified at an early stage.

Nutritional support and advice can assist the preservation of physical strength, enhance quality of life, reduce hospital stay, improve clinical outcomes, enhance the beneficial effects of chemotherapy and improve tumour response to radiation therapy.


**Key fact**

Patients who take oral nutritional supplements before surgery, as they maybe at risk of weight loss, are found to have fewer surgical site infections.


During the treatment phase, dietitians manage and monitor the common general and site specific side effects of radiotherapy and chemotherapy such as anorexia, nausea, fatigue and mood, deranged glycaemic control, dysphagia and bowel symptoms.

Combinations of these, together with travelling for treatment each day, food shopping, food preparation and eating, can have a devastating effect on food intake and in turn response to cancer treatment.

Dietitians ensure nutritional and hydration needs are met in an acceptable and appropriate way for each individual person throughout the course of the disease.

Nutritional assessment should be an integral part of patient monitoring following cancer treatment. Some patients with complex nutritional problems will need on-going specialist dietetic follow up.

**GOLDEN NUGGET**

**Improve prescribing**

Dietetic advice & review of oral nutritional supplements results in more appropriate prescribing practices, the prevention and treatment of malnutrition, including reducing hospital admissions, improving patient outcomes and reducing GP visits (source: London).

In the last four years London PCTs spent £50m on ONS. 57–75% of prescriptions do not meet ACBS prescribing criteria.

---

**Orthoptists**

A cancer patient may experience a range of difficulties relating to vision which are detrimental to their activities of daily living including adaptation, navigation and mobility.

**Key fact**

Orthoptists provide solutions to these difficulties with devices which facilitate mobility and referrals for prescription of spectacles.


Community-based trial of a peripheral prism visual field expansion device for hemianopia (2008). View report >

Reading aids for adults with low vision (2006). View report >

---

**Music therapists**

Music therapy is a non-invasive and inexpensive approach to mood disturbance for patients ‘During Hospitalisation for Autologous Stem Cell Transplantation’ used to treat multiple myeloma.

Benefits of AHP input: treatment stage

AHPs’ contributions at the treatment stage.

**Occupational therapists**
Provide rapid access to equipment/adaptations.

**GOLDEN NUGGETS**

**£60,000 savings**
A study that explored the relationship between provision of equipment and reduction on care package costs and residential care found that over an eight week period cost savings to care packages through provision of equipment were over £60,000.

**Adaptations savings**

Housing adaptations reduce the need for daily visits and reduce or remove costs for home care (savings range from £1,200 to £29,000 a year).

**Key facts**

Patients are less likely to require hospital admission or GP intervention if they are better able to cope with the treatment effects and have coping strategies. An early finding of the National Cancer Survivorship Initiative (NCSI) workstream is that vocational rehabilitation specialists have an important role in providing training for health professionals and employers.

**Orthotists**

Orthotists enable patients to regain their independence post surgery. For example a patient with multiple myeloma and spinal cord metastases may need a trunk brace to provide stability to the spinal cord in extension. This optimises healing and prevents deterioration of spinal condition potentially leading to prolapsed spine and paralysis with its consequent morbidity.

**Key fact**

Orthotists can prevent further damage to irradiated skin and maintain tissue integrity through the identification of appropriate materials, thus ensuring the rehabilitation and reablement process is not hindered.

For patients with an upper limb sarcoma orthotists assess function to identify the most appropriate upper limb harnesses to facilitate a gradual increase in limb use as part of the rehabilitation process. This leads to increased functionality and the lessened likelihood of infection and amputation.

**GOLDEN NUGGETS**

**£400m savings**

For every £1 spent on orthotic services the NHS saves £4 representing a saving of £400million to the NHS.

AHPs’ contributions at the treatment stage.

**Key facts**

**Breathing training**
- Use of walking aids, neuro-electrical muscle stimulation and chest wall vibration appeared to be effective in improving shortness of breath.

**Planning and pre-treatment preparation**
- Therapeutic radiographers are highly complex set of tasks delivered in a seamless process to a patient.
- Plan CT, PET or MRI scans to reference density and to define target volume accurately.

During treatment the therapeutic radiographer ensures reproducibility of patient position accuracy and optimised treatment delivery through:
- Making customised immobilisation devices for cranial and head and neck tumours
- Administering patient reference marks including permanent skin marks.
- Making lead masks for facial skin cancer to avoid irradiation of healthy tissue.
- Safe, accurate delivery of radiotherapy including image guided radiotherapy (IMRT/ IGRT).

**Therapeutic radiographers**

Planning and pre-treatment preparation is an essential component of therapeutic radiography to ensure accurate administration of treatment, avoiding damage to non-pathological sites. This will mitigate the risk of negative psychological impact, reduction in tumour control with further care costs, trauma to patients and potential litigation costs.

Planning and preparation by therapeutic radiographers is a highly complex set of tasks delivered in a seamless process to a patient. Plan CT, PET or MRI scans to reference density and to define target volume accurately.

During treatment the therapeutic radiographer ensures reproducibility of patient position accuracy and optimised treatment delivery through:

- Making customised immobilisation devices for cranial and head and neck tumours
- Administering patient reference marks including permanent skin marks.
- Making lead masks for facial skin cancer to avoid irradiation of healthy tissue.
- Safe, accurate delivery of radiotherapy including image guided radiotherapy (IMRT/ IGRT).

Provide psycho-social and holistic support acting as a key worker, assessment, recording and management of radiotherapy related toxicity and non-medical prescribing.

**In the pre-treatment phase, the National Radiotherapy Advisory Group have provided a number of opportunities for cost effective service delivery including the use of radiographers supervising Band 4 Assistant Practitioner roles.**

Therapeutic radiographers can be up skilled to take informed consent for some radiotherapy treatments. This frees clinical oncologist time in line with NRAG recommendations.

**GOLDEN NUGGET**

**Benefits of radiotherapy**

Radiotherapy is more cost effective than chemotherapy as chemotherapy is more invasive and its side effects incur significant pharmaceutical bed days and nursing costs.

Chemotherapy cures 7% of cancer, radiotherapy delivered by therapeutic radiographers should be used in over 50% of cancer patients and of these patients it contributes to cures in over 35% of patients with cancer.

See National Cancer Action Team report >

In the pre-treatment phase, the National Radiotherapy Advisory Group have provided a number of opportunities for cost effective service delivery including the use of radiographers supervising Band 4 Assistant Practitioner roles.

Therapeutic radiographers can be up skilled to take informed consent for some radiotherapy treatments. This frees clinical oncologist time in line with NRAG recommendations.

See Department of Health website >

**References**


Breathing training, use of walking aids, neuro-electrical muscle stimulation and chest wall vibration appeared to be effective in improving shortness of breath.

**Physiotherapists and Occupational therapists**

Assess and assist patient to manage impact of treatments and optimise recovery time. They provide individualised rehabilitation plans to:

- Reduce impact of surgery/chemotherapy/ radiotherapy i.e. breathlessness, fatigue, poor mobility and pain
- Promote restoration of function through physical rehabilitation techniques and/or compensatory strategies.

This results in reducing long term care needs and associated costs.

**In the pre-treatment phase, the National Radiotherapy Advisory Group have provided a number of opportunities for cost effective service delivery including the use of radiographers supervising Band 4 Assistant Practitioner roles.**

Therapeutic radiographers can be up skilled to take informed consent for some radiotherapy treatments. This frees clinical oncologist time in line with NRAG recommendations.

See Department of Health website >

Continued on next page >
Therapeutic radiographers’ contributions at the treatment stage.

**GOLDEN NUGGET**

**AHP role**

80% of radiotherapy activity is standard and could be delivered by non-medical consultants. Over half the workforce in radiotherapy are therapeutic radiographers and could contribute to this standard activity.

Radiotherapy moving forward: Delivering new radiography staffing models in response to the Cancer Reform Strategy. View report >

**Mitigate paralysis**

Combined with additional dietetic input the radiographer is responsible for monitoring the patient weight/separation throughout treatment. Re-planning is very resource heavy requiring additional input from clinicians and physics dept. This study shows the number of weight loss related re-plans has been cut to 0 compared to 6 the previous year. Patients benefit from Image Guided Radiotherapy as less radiation is received by surrounding normal tissue minimising poor treatment outcomes of either relapse or no cure, and avoiding damage to healthy tissue and higher morbidity.

Consultant therapeutic radiographers offer patients requiring adjuvant pelvic radiotherapy/brachytherapy for endometrial cancer psycho-sexual advice and personalised care releasing clinical oncologist time.

Therapeutic radiographers manage treatment review clinics, (freeing clinical oncologist time). The addition of training by therapeutic radiographers in supplementary prescribing is further improving the quality and efficiency of care, reducing waiting times for patients, and input from the clinical oncologist.

**Key fact**

Therapeutic radiographers manage treatment review clinics, (freeing clinical oncologist time). The addition of training by therapeutic radiographers in supplementary prescribing is further improving the quality and efficiency of care, reducing waiting times for patients, and input from the clinical oncologist.

Audit of referrals 2008 – 11 for examples of the extended range of responsibilities radiographers can undertake. Appendix A

The Society and College of Radiographers SCoR/RCN/IPEN guidance recognises skill mix. See section 12 – 15 Roles and responsibilities of Radiotherapists. Go to website >

Therapeutic radiographers help patients provide advice and support to manage the side effects of Radiation Treatment such as fatigue, skin irritation, sore and dry mouth, fever and chills, nausea, vomitting and pain.
AHPs’ contributions at the survivorship stage.

**Art therapists**

**GOLDEN NUGGET**

**Improving wellbeing**

Art therapists can impact positively on the rehabilitation process through improved wellbeing and positive emotions, a Randomised Controlled Treatment research has identified.


Art therapy offers psychological benefits to cancer patient residential settings which offer respite. Download Penny Brohn Cancer Care document >

Art therapists explore negative feelings about the consequences of cancer and this can prevent post treatment anxiety and depression in cancer patients.


Art therapists enable carers to safely explore the challenges of being a carer and add an objective perspective which promotes positive psychological feelings and the resilience to continue in the carer role, keeping care as a family responsibility rather than the costs of local authority care services support.


**Dietitians**

Dietitians assess and manage the on-going and late effects of cancer treatment i.e. managing weight change, swallowing difficulties, fatigue, malabsorption. Dietitians will advise on alternative diets, feeding, supplements and alternatives as appropriate.

**Key fact**

Promotion of exercise, dietary improvements and weight loss on cancer survivors with colorectal, breast and prostate cancer had a positive effect on physical activity, dietary behaviour and quality of life.


**Key fact**

The impact of diet counselling on body weight and other metabolic indices in overweight breast cancer survivors using either a low fat or low carbohydrate regime showed weight loss and loss of lean body mass as well as improvements in total/HDL cholesterol ratio and significant reductions in HbA1c, insulin and glucose levels after 6 months.


**GoLDEN NUGGET**

Many people with cancer are tempted to try unconventional remedies, including alternative and complimentary diets, in the hope of cure or remission. No randomised controlled trials have been carried out to evaluate the benefit of such diets and cancer patients may not be aware of the potential risks of using complementary and alternative medicines.

AHPs’ contributions at the survivorship stage.

**Podiatrists**
Patients following surgical treatment on the foot may suffer with reduced mobility and loss of function. Podiatric intervention can help improve mobility as part of the ongoing treatment plan.

**Occupational therapists and physiotherapists**
Physiotherapists and occupational therapists can assess functional issues caused by the late effects of cancer treatments i.e. altered motor, neurological, musculo–skeletal, cognitive, perceptual, visual and sensory function.

**Key fact**
A meta analysis where physical rehabilitation was carried out in 994 cancer patients with central nervous system involvement showed an improvement in the Functional Independence Measure and the Barthel Index.


Occupational therapists assess and advise about work and can advise/procure ergonomic equipment or adaptations that are required for the patient to continue previous employment or be supported to work.

**GOLDEN NUGGET**

**Economic benefits**
It has been shown that if just half of breast cancer survivors who initially return to work but then leave were helped to stay in work the economy could save £30m every year.

Macmillan Cancer Support ‘Making it Work’. Download report >

---

**Key fact**
Multidisciplinary interventions involving physical, psychological and vocational components have been shown to lead to higher return to work rates than care as usual.

*de Boer A, Taskila T, Tammenga S, Frings-dresen M, Feurstein M, Verbeek J (2011), Interventions to enhance return-to-work for cancer patient, Cochrane Database of Systematic Reviews, Feb (2)CD007569.*

Manage on-going and late effects of cancer treatments i.e.  
- lymphoedema (prevent it from becoming complex)  
- fatigue  
- pain  
- lack of movement  
- continence  
- stiffness, scarring  
- advice on need to increase general activities  
- advise on non pharmacological pain management  
- effects of palliative radiotherapy.

**Key fact**
A summary of 20 studies concluded that there was a positive effect on cancer related fatigue and skeletal muscle wasting in patients with multiple myeloma and other cancers with a range of exercise interventions.


An individualised home based exercise programme found significant positive change in lean body weight and decreasing fatigue, mood disturbance and sleep.


**Key fact**
An evaluation of the impact of physiotherapy immediately following neck dissection found that the patients receiving the treatment reported better physical wellbeing.

AHPs’ contributions at the survivorship stage.

**Key fact**
Enhanced sleep quality, quality of life and reduced bodily pain were found as a result of home based walking exercise.

_Tang MF, Liou TH, Lin CC,(2010), Improving sleep quality for cancer patients: benefits of a home-based exercise intervention, Supportive Care in Cancer, 18(10),1329-39._

**GOLDEN NUGGET**

**Early MSCC diagnosis**
In metastatic spinal cord compression (MSCC) physiotherapists developing a red flag card to raise awareness of the possibility of MSCC is 8.8p each. The cost of circulating 9000 at £800 would be far outweighed by the cost saved if even one case of MSCC is diagnosed early or prevented.


The provision of good advice and information, referral to local support services and accessible rehabilitation services will enable people to better manage their own condition and symptoms through recognising signs and having access back to AHPs.

Occupational therapists help patients cope with altered body image and consider impact of late effects of cancer treatment. Consider sexual concerns expressed by the patient.

Assess and assist in:
- Ability to self-manage anxieties may reduce need for mental health/support organisations
- Sleep strategies
- Concerns associated with role loss/adaption to new roles.

**Orthoptists**
Orthoptists enhance patient confidence, by recommending devices for vision which improve functional mobility in activities of daily living such as personal hygiene, reading, and driving. These skills are essential when planning rehabilitation strategies to aid return to work.

Orthoptists can also refer on to vision information services such as Eye Clinic Liaison Officer (ECLO), and the RNIB which will enable assessment of need for Certificate of Visual Impairment registration (CVI) and access to sensory loss teams in social services, who can deliver lifelong support.

_References_

**Key fact**
Behavioural techniques were effective in improving fatigue, reducing anxiety and depression and a significant effect of physical exercise on fatigue, depression, body image and quality of life in breast cancer patients and survivors.

_ Dufts SF, Faber MM, Oldenburg HS, van Beurden M, Aaronson NK, (2011), Effectiveness of behavioural techniques and physical exercise on psychosocial functioning and health-related quality of life in breast cancer patients and survivors: a meta-analysis, Psycho-Oncology, 20 (2), 115-26._

**Orthoptists**
Orthoptists enhance patient confidence, by recommending devices for vision which improve functional mobility in activities of daily living such as personal hygiene, reading, and driving. These skills are essential when planning rehabilitation strategies to aid return to work.

Orthoptists can also refer on to vision information services such as Eye Clinic Liaison Officer (ECLO), and the RNIB which will enable assessment of need for Certificate of Visual Impairment registration (CVI) and access to sensory loss teams in social services, who can deliver lifelong support.

_RNIB website >
British and Irish Orthoptic Society website _
AHPs’ contributions at the survivorship stage.

**Prosthetists**
Patients who experience limb amputation have the best rehabilitation outcomes where they are mobilised as soon as possible, becoming psychologically and socially more confident. This results in easier transition in returning to work, or to retraining with less dependency on social services for care and mobility and incapacity.

**GOLDEN NUGGET**

**£9m saving**
The CIPD survey (2009) found that the average level of employee absence was 7.4 days. The cost per employee per year was £692. A reduction of absence of 1% would produce a productivity benefit of around £9 million.

**Improving quality of life**
A study of treating phantom pain with a textile, electromagnetically shielding residual limb liner showed a high economic benefit; expensive conventional therapies significantly exceed the annual therapy costs of care using relax liners. There is a high potential for the prosthetic profession to improve quality of life for a high number of their patients that experience phantom pain.

**Key fact**
In a review examining the effects of participation in sports or regular activity in people with limb amputations it was concluded that people with amputations should be encouraged to undertake physical activity.

**Therapeutic radiographers**
Therapeutic Radiographers manage radiotherapy related toxicity; lead radiology led head and neck cancer clinics and provide psycho-social and holistic support.
Cancer care literature review and analysis

Introduction

The Strategic Allied Health Professionals Leads Group (SAHPLE) commissioned York Health Economics Consortium (YHEC) to carry out economic analysis of the impact of AHP interventions across cancer care pathways. AHP practitioners provided YHEC with two frameworks which highlighted a series of specific interventions by AHPs classified under four categories:

- Pre-diagnosis
- Assessment/Diagnosis
- Treatment
- Survivorship.

The frameworks cover:
Art, Music and Drama Therapists, Diagnostic Radiographers, Dietitians, Lymphoedema practitioners, Occupational Therapists, Orthoptists, Physiotherapists, Podiatrists, Prosthetists and Orthotists, Speech and Language Therapists, Therapeutic Radiographers.

Our approach

YHEC reviewed literature around each of the interventions included in both frameworks. This has been a considerable undertaking with around 30 interventions being identified for both. We carried out broad searches for literature using databases including Medline, the Cochrane Database of Systematic Reviews and NHS Evidence. We sought evidence from a range of sources in the following sequence: DH/ NHS policy documents; clinical guidelines; case studies; published literature; individual NHS organisations; and expert opinion. We were also provided with a range of literature references from SAHPLE which we reviewed.

These searches represent an extensive but not exhaustive search of the available literature. With the resources available we were not able to search other sources such as literature held by the Royal Colleges which are available for members only.

We contacted the Chartered Society of Physiotherapy, the Royal College of Speech and Language Therapists, the College of Occupational Therapists and the Society of Radiographers who provided some clinical guidelines. However, our search is likely to have identified the highest quality evidence. The view from SAHPLE is that there is more extensive literature on interventions by AHPs but that much of this is not published.

YHEC has used the data obtained to present the evidence in two ways:

- Examples of economic analysis across the pathways where AHPs can make a significant impact on patient care and, potentially, costs. A scenario demonstrating some of the potential areas that AHPs can have an impact on the head and neck cancer pathway is presented below:

- Evidence to support the effectiveness and potential economic benefits for each of the interventions included in the SAHPLE frameworks. Of the evidence as follows:
  - Evidence supported by published study or literature in GREEN
  - Evidence supported by observational study or case study in AMBER
  - Evidence supported by clinical opinion or assumption in RED.
AHP interventions in the head and neck cancer pathway

**Intervention A:**
The use of diagnostic radiographers helps to improve the speed with which services can be performed and frees up the time of radiologists and neuroradiologists. Staffing implications include a SLT and a dietitian.1

**Interventions B and C:**
Head and neck cancer patients should be given:
- Protocol driven, radiographer-led exams e.g. IVUs, DEXA, Nuclear Medicine;
- Radiographer and sonographer vetting of requests;
- Radiographers and/or radiology nurses perform selected interventional procedures (for example central line placement, breast biopsy), or sedation.

**Interventions B and C:**
- Speech and language therapy.
- Nutritional support;
- Protocol driven, radiographer-led exams e.g. IVUs, DEXA, Nuclear Medicine;
- Radiographer and sonographer vetting of requests;
- Radiographers and/or radiology nurses perform selected interventional procedures (for example central line placement, breast biopsy), or sedation.

**Avoided cost**
- Consultant radiologist.
- Reduced length of stay and avoidance of complications.

**Avoided cost**

---

Cancers of the head and neck are relatively rare and should be managed by specialists as part of a multidisciplinary team (MDT) including a SLT and a dietitian.1

**Intervention D:**
Interventions by an SLT are shown to enhance SLT to treat dysphagia has been shown to generate £1.30 for every £1 spent due to the monetary benefit associated with the quality of life gain. Similarly, SLT interventions to treat dysphagia have been shown to result in a gain of quality adjusted life years for each patient. The benefit is estimated to be any difference between using percutaneous endoscopic gastrostomy and nasogastric feeding.

Speech and language therapists should give appropriate support to patients for dysphagia:
- all patients undergoing treatment should have access to a specialist speech and language therapist (SLT) before, during, and after treatment;
- patients should see a specialist head and neck SLT if communication problems are likely to occur;
- patients with dysphagia should receive appropriate speech and language therapy to;
- optimise residual swallowing function;
- reduce aspiration risk;
- all patients should have access to instrumental investigation for dysphagia:
- modified barium swallow (MBS);
- fibreoptic endoscopic evaluation of swallow (FEES);
- SLT should consider which is most appropriate for different patients in different settings.

**Avoided cost**

---


4. An economic evaluation of speech and language therapy. Royal College of Speech and Language Therapists.
### Pre-diagnosis (1 of 3)

<table>
<thead>
<tr>
<th>INTERVENTION IN PATHWAY</th>
<th>IMPROVING OUTCOMES</th>
<th>THE ECONOMIC ARGUMENT</th>
<th>CASE STUDIES</th>
</tr>
</thead>
</table>
| **Diagnostic radiographer**
All diagnostic radiographers use a range of imaging modalities: x-ray, CT, PET CT, ultrasound, MRI and nuclear medicine procedures to screen high risk groups and monitor cancer patients. | Research evidence shows that, given sufficient training and resources, health staff can undertake many extended practices, showing clear benefits in training AHPs to undertake specific tasks, traditionally performed by medical practitioners. Trained radiographers are able to use X-rays as a diagnostic tool but further research is needed to systematically evaluate the impact of extended roles on health outcomes. Department of Health. Briefing Paper – Extending the practice of allied health professionals in the NHS. March 2006. Service improvement in radiology should lead to benefits for patients (eg. shorter waiting times for examinations and results, increased patient safety); organisations (eg. efficient, cost effective services, lower DNA rates, shorter waiting times). Staffing implications for improved radiology services include advanced practice such as:
• Radiographers perform barium enemas, and other fluoroscopic procedures.
• Radiographer reporting (Plain films, selected CT, selected MR, fluoroscopic procedures.)
• Protocol driven, radiographer-led exams e.g. IVUs, DEXA, Nuclear Medicine.
• Radiographer and sonographer vetting of requests.
• Radiographers and/or radiology nurses perform selected interventional procedures (for example central line placement, breast biopsy), or sedation. Service Improvement for Radiologists: a signposting document summarising service improvement methodology and benefits. NHS Radiology Service Improvement Team. 2007. | The difference in hourly cost of a reporting radiographer and a radiologist is around £120, based on the cost of a radiographer at the mid-point of Agenda for Change Band 7 and a consultant radiologist. The potential saving from substituting radiographers for radiologists is only a realised cash saving to the hospital if they subsequently reduce the number of radiologists they employ. It is more likely that this will be an opportunity cost saving, i.e. the freeing up of this resource in the form of time available to radiologists to carry out other work. | }
<table>
<thead>
<tr>
<th>INTERVENTION IN PATHWAY</th>
<th>IMPROVING OUTCOMES</th>
<th>THE ECONOMIC ARGUMENT</th>
<th>CASE STUDIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diagnostic radiographer</strong>&lt;br&gt;Diagnostic radiographers are essential in screening programmes.</td>
<td>Radiography can detect small cancers less than 15mm across and too small to be detected by hand, that are likely to respond to treatment. The NHS breast screening programme detected nearly 6,000 invasive cancers under 15 millimetres in 2010, around two fifths of all breast cancers. Detection of small cancers proves benefit of screening. GP online news 14 March 2011. The NHS Breast Screening Programme screens 1.3 million women each year and diagnoses about 10,000 breast cancers annually. Regular mammographic screening between the ages of 50 and 70 years reduces mortality from the malignancy. Screened women are slightly more likely than unscreened women to be diagnosed with breast cancer. The cancers in screened women are smaller and are less likely to be treated with mastectomy than they would have been if diagnosed without screening. For every 400 women screened regularly by the NHS Breast Screening Programme over a 10 year period, one woman fewer will die from breast cancer than would have died without screening. <a href="#">Screening for Breast Cancer in England: Past and Future. Advisory Committee on Breast Cancer Screening. NHSBSP Publication No 61, February 2006.</a></td>
<td>Breast screening in England for women aged 50–70 years costs around £75 million per year. The programme is estimated to save about 1,400 lives per year. Without screening, the average age at which these women would have died is 67 years old. Life expectancy at this age is a further 18 years. Hence, each woman whose life is saved by the programme can be expected to live, on average, about an additional 18 years, and the cost of the breast screening programme is thus about £3,000 per year of person–life gained. This cost compares favourably with many other health interventions currently undertaken in the NHS, including screening for cervical cancer. <a href="#">Screening for Breast Cancer in England: Past and Future. Advisory Committee on Breast Cancer Screening. NHSBSP Publication No 61, February 2006.</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Research has shown that as well as other factors, improvements in health outcomes also depend on the knowledge and beliefs of people with learning disabilities. In 2006 NHS Cancer Screening Programmes published guidance on equal access to breast and cervical screening for disabled women to provide information to enable them to make decisions, to know what to expect when they attend for screening and to understand the possible consequences. Early detection can improve treatment and reduce later costs and mortality. 13 areas in England are applying an improved efficiency model to improve detection of cervical cancer, for the general population rather than women with learning disabilities. Quality is improved by the optimal treatment of patients with suspected cervical cancer, thereby reducing the risk of death. It has also led to other quality improvements such as improved safety, early detection of cancers and improved communication with women. <a href="#">Cervical cancer screening – improved efficiency. NHS Evidence – Quality and Productivity.</a></td>
<td>In the 1970's a study examining the cost effectiveness of applying the Pap test for cervical cancer showed that as a one-time screening device the test is cost effective from society's standpoint. <a href="#">Cost effectiveness of early detection of disease (1974). Schweitzer S. Health Services Research 9(1): 22-32.</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The improved efficiency model for cervical screening has demonstrated increased productivity through the reduction in costs associated with duplication of work and centralised laboratory services reduce overhead costs. This has led to savings of up to £100,000 at some sites, an overall reduction in waiting times of 4 million days and potential savings of up to £18 million if applied throughout England. There would be around £7 million of additional costs to implement this. Increasing the percentage of women with learning difficulties taking up the option of screening and improving the efficiency of screening could therefore lead to benefits for patients and cost savings. <a href="#">Cervical cancer screening – improved efficiency. NHS Evidence – Quality and Productivity.</a></td>
<td></td>
</tr>
</tbody>
</table>
Pre-diagnosis (3 of 3)

<table>
<thead>
<tr>
<th>INTERVENTION IN PATHWAY</th>
<th>IMPROVING OUTCOMES</th>
<th>THE ECONOMIC ARGUMENT</th>
<th>CASE STUDIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Orthoptists</strong></td>
<td>Secondary to a pineocytoma. Orthoptists work with ophthalmologists to enable patients with red flag cancer symptoms to be fast tracked for referral for treatment, which improves prognosis or speeds provision of palliative care in poor prognosis.</td>
<td>Compared to usual care the mean incremental cost for ERS was £169 and the mean QALY was 0.008. The base incremental cost effectiveness ratio (ICER) for ERS was £20,876 per QALY in sedentary obese individuals, £12,834 per QALY in sedentary hypertensives and £8,414 per QALY for sedentary individuals with depression. However, because incremental costs and QALYs are small they are highly sensitive. The study concluded that the cost effectiveness of ERS is uncertain because of limitations and gaps in the clinical effectiveness evidence base. This along with high sensitivity of the ICER means that robust evidence on which ERS is likely to be cost-effective cannot currently be provided.</td>
<td></td>
</tr>
<tr>
<td><strong>Physiotherapy</strong></td>
<td>A study on the cost effectiveness of exercise referral systems (ERS) found weak evidence of an increase in the number of ERS participants who achieved 90-150 mins of at least moderate intensity physical activity per week at 6-12 months follow up. There was no consistent evidence to support a difference between ERS and usual care in the duration of moderate/vigorous intensity and total physical activity, physical fitness, blood pressure, serum lipids, glycaemic control, obesity indices, respiratory function, psychological wellbeing or health-related quality of life. No differences in physical activity or other outcomes in ERS versus alternative physical activity interventions or versus ERS plus a self determination intervention.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T Pavey et al. The Effectiveness and cost-effectiveness of exercise referral schemes: a systematic review and economic evaluation.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Appendix A
Art therapy
Art therapy enables cancer patients to express anxiety about their cancer diagnosis and this will help to prevent the onset of depression with associated pharmacological costs and reliance on social care.

The psychological impact of breast cancer can include adjustment disorders, depression and anxiety and may generate feelings of fear, anger, guilt and emotional repression. A pilot complementary creative arts therapy intervention showed enhanced psychological well-being by decreasing negative emotional states and enhancing positive ones in women newly diagnosed with breast cancer.

Counselling sessions were held with semi-structured creative art therapy experiences using pencils, pastels and/or acrylic painting supplies and multipurpose drawing/painting tablets with guiding questions. The research found that there was no statistical significance for clinical outcomes but Profile of Mood States showed statistically significant improvements compared to the control group for:

- Anger/hostility;
- Confusion/bewilderment;
- Depression/dejection;
- Fatigue/inertia;
- Tension/anxiety;
- Vigour/activity


Evidence shows that art therapy is effective in reducing depression and anxiety. The total NHS costs for depression were estimated by NICE to be £1.7 billion for 2007, and projected to rise to £3 billion by 2026. If employment rates and increased absenteeism are taken into account, the total loss of output to the economy due to depression and chronic anxiety is some £12 billion a year or one per cent of our total UK income. Of this the cost to the taxpayer is around £7 billion, including incapacity benefits and lost tax receipts.

The Centre for Economic Performance estimated the benefits of recovery from depression at around £5,600 over two years, based on:

- NHS costs £300
- Extra econ output £1,100
- Extra QALYs £3,300
- Reductions in benefits and additional taxes £900


Dietitians
Dietitians provide nutritional assessments in preparation for the patient under-going cancer treatments. Appropriate nutritional screening and timely intervention can limit weight loss. This potentially has direct cost benefits both financially and in terms of the quality of life of the patient and carers. Malnutrition is recognised as a poor prognostic indicator for cancer morbidity and mortality.

Malnourished patients stay in hospital for much longer, are three times as likely to develop complication during surgery and have a higher mortality rate.


In 1992 the Kings Fund carried out a study on malnutrition and modelled the potential cost savings that could be made if 10% of hospital patients experienced a 5-day reduction in length of stay – a saving of £266 million annually. This would be a much larger saving now. The saving was based on an American study which found that patients with malnutrition had a length of stay of 15 days as opposed to other patients whose average length of stay was 10 days.

### Assessment and Diagnosis (2 of 4)

<table>
<thead>
<tr>
<th>INTERVENTION IN PATHWAY</th>
<th>IMPROVING OUTCOMES</th>
<th>THE ECONOMIC ARGUMENT</th>
<th>CASE STUDIES</th>
</tr>
</thead>
</table>
| **Lymphoedema practitioners**  
Can help by preventing lymphoedema in the first place and then if people do get it, preventing it becoming a complex problem by providing early treatment.  
Assess physical domains to improve/manage the impact of any treatments (surgical /radio /chemotherapy) and optimise recovery time: coordination, mobility, balance, range of movement, strength and function. | The lymphoedema practitioner is usually a key member of a specialist team that provides a high quality, evidence based service for patients. The service includes:  
- A comprehensive assessment of the problem;  
- Accurate measuring and fitting of garments when appropriate;  
- Multi-layer lymphoedema bandaging when appropriate;  
- Education and advice to patients and carers on skincare;  
- Lymph drainage massage techniques;  
- Exercise routines;  
- Provision of advice to other professionals.  
A Stigant. The lymphoedema practitioners role in provision of care: a case study. Journal of Community Nursing. 2006. | A study over 6 weeks found that the cost of active treatment including the use of specialised hosiery and short stretch bandages was cheaper than traditional maintenance treatment with bandages and dressings.  
The active treatment cost £1,162 over the 6-week period while the traditional treatment cost £3,160.  
Activa Healthcare. | A lymphoedema nurse specialist in Staffordshire carried out active treatment using hosiery and short stretch bandages for a lady with congestive cardiac failure, chronic oedema, a leg ulcer on one leg and copious lymphorrhoea in both legs. After 2 weeks the leg ulcer showed significant signs of improvement. After 4 weeks the leg without the ulcer was dry and fitted with hosiery. After 6 weeks the leg with the ulcer was dry and treated with a dressing and hosiery. After 12 months of excessive leakage she was now dry, able to wear hosiery and the slippers her daughter had bought for her.  
Activa Healthcare. |
| **Occupational therapy**  
Manage anxiety and refer onto appropriate specialist as appropriate:  
- relaxation  
- sleep strategies  
- mood management  
- Assess psychological concerns associated with nutritional issues.  
Weight loss is reported to affect quality of life scores, in particular functional capacity, social interactions and psychological outlook. | For men following radical radiotherapy for prostate cancer, the data strongly suggested lower late toxicity among non-smokers, individuals who exercise regularly and who were not overweight.  
There is persuasive evidence that a healthy lifestyle during and after cancer is associated with improved physical and psychological well-being, reduced risks of treatment, enhanced self-esteem, reduced risk of recurrence, and improved survival.  
Lifestyle during and after prostatic radiotherapy influences the risk of late toxicity. R Thomas et al.  
## Assessment and Diagnosis (3 of 4)

<table>
<thead>
<tr>
<th>INTERVENTION IN PATHWAY</th>
<th>IMPROVING OUTCOMES</th>
<th>THE ECONOMIC ARGUMENT</th>
<th>CASE STUDIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Occupational therapy</strong></td>
<td>The link between adopting a healthy lifestyle and a reduction in the rate of established cancer progression is now emerging. A number of epidemiological and cohort studies have demonstrated that individuals with healthier lifestyles tend to present with less aggressive cancers, so their prognosis is better.</td>
<td>At Glasgow Royal Infirmary clinic costs were reduced from £345 (consultant radiologist + speech therapist) to £215 (radiographer + speech therapist). At five clinics per week the annual saving for the hospital was 5 x £130 x 52 = £33,800. 124 hospitals in England treat acute stroke so if these savings were replicated across each, there is potential for national annual savings to the NHS of £4.191 million. These savings could be in the form of cash through a reduction in the number of radiologists employed or as opportunity cost savings whereby the time of radiologists can be used for additional activity.</td>
<td>At Glasgow Royal Infirmary clinic costs were reduced from £345 (consultant radiologist + speech therapist) to £215 (radiographer + speech therapist). At five clinics per week the annual saving for the hospital was 5 x £130 x 52 = £33,800. 124 hospitals in England treat acute stroke so if these savings were replicated across each, there is potential for national annual savings to the NHS of £4.191 million. These savings could be in the form of cash through a reduction in the number of radiologists employed or as opportunity cost savings whereby the time of radiologists can be used for additional activity. Stroke pathway – delivering through improvement – <a href="http://www.evidence.nhs.uk/qualityandproductivity">www.evidence.nhs.uk/qualityandproductivity</a>, November 2009. Stroke pathway – delivering through improvement – <a href="http://www.evidence.nhs.uk/qualityandproductivity">www.evidence.nhs.uk/qualityandproductivity</a>, November 2009.</td>
</tr>
<tr>
<td><strong>Radiographers and Speech and Language Therapists</strong></td>
<td>Radiographers working with Speech and Language Therapists assess using video fluoroscopy techniques to diagnose and assess a range of feeding and swallowing problems that could lead to aspiration pneumonia and death. Other assessment techniques include the monitoring of oxygen saturation and fibreoptic endoscopic evaluation of swallowing (FEES) to assess the status of stroke victims swallow.</td>
<td>At Glasgow Royal Infirmary clinic costs were reduced from £345 (consultant radiologist + speech therapist) to £215 (radiographer + speech therapist). At five clinics per week the annual saving for the hospital was 5 x £130 x 52 = £33,800. 124 hospitals in England treat acute stroke so if these savings were replicated across each, there is potential for national annual savings to the NHS of £4.191 million. These savings could be in the form of cash through a reduction in the number of radiologists employed or as opportunity cost savings whereby the time of radiologists can be used for additional activity. Stroke pathway – delivering through improvement – <a href="http://www.evidence.nhs.uk/qualityandproductivity">www.evidence.nhs.uk/qualityandproductivity</a>, November 2009. Stroke pathway – delivering through improvement – <a href="http://www.evidence.nhs.uk/qualityandproductivity">www.evidence.nhs.uk/qualityandproductivity</a>, November 2009.</td>
<td>Stroke pathway – delivering through improvement – <a href="http://www.evidence.nhs.uk/qualityandproductivity">www.evidence.nhs.uk/qualityandproductivity</a>, November 2009. Stroke pathway – delivering through improvement – <a href="http://www.evidence.nhs.uk/qualityandproductivity">www.evidence.nhs.uk/qualityandproductivity</a>, November 2009.</td>
</tr>
<tr>
<td></td>
<td>Optimise QOL through review of activities of daily living and goal setting:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Discuss lifestyle adjustment including role loss and self-esteem</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Assess and support patient to carry out personal care and domestic activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provide support to enable continued attendance at work (meaningful occupation) as indicated by the patient. Reduces longer term dependency/social care needs and improves patient outcomes.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Assessment and Diagnosis (4 of 4)

<table>
<thead>
<tr>
<th>INTERVENTION IN PATHWAY</th>
<th>IMPROVING OUTCOMES</th>
<th>THE ECONOMIC ARGUMENT</th>
<th>CASE STUDIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prosthetists</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A patient waiting for elective surgery may see a prosthetist to determine the type and level of need. This will help the patient to acclimatise to future change more quickly.</td>
<td></td>
<td>The CIPD annual survey absence report 2009 found that the average level of employee absence was 7.4 days per employee and the average cost per employee per year was £692. The cost included elements such as occupational and statutory sick pay, the cost of replacement labour, overtime costs and the cost of reduced performance. That equates to an average cost of absence per day per employee of £94 and an overall cost to UK employers of around £875 million. A reduction of absence by 1% would produce a productivity benefit of around £9 million.</td>
<td>Chartered Institute of Personnel and Development. Absence management – annual survey report 2009.</td>
</tr>
</tbody>
</table>
### Cancer framework – Art, Music and Drama Therapists, Diagnostic Radiographers, Dietitians, Lymphoedema Practitioners, Occupational Therapists, Orthoptists, Physiotherapists, Podiatrists, Prosthetists and Orthotists, Speech and Language Therapists, Therapeutic Radiographers

#### Treatment (1 of 8)

<table>
<thead>
<tr>
<th>INTERVENTION IN PATHWAY</th>
<th>IMPROVING OUTCOMES</th>
<th>THE ECONOMIC ARGUMENT</th>
<th>CASE STUDIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dietitians</strong></td>
<td>Advice regarding alternatives to nutritional supplements e.g. drinks can help improve prescribing efficiency.</td>
<td>Nutritional support and advice can assist the preservation of physical strength improve tumour response to both radiation therapy. Prognostic effect of weight loss prior to chemotherapy in cancer patients. De Wys W, Begg C, Lavin P, Band P et al (1980) American Journal Medicine 69: 491-497.</td>
<td>The costs of early nutritional care are low. Studies have found that screening with the short nutritional assessment questionnaire and early standardized nutritional care improves the recognition of malnourished patients provides the opportunity to start treatment at an early stage of hospitalization. The additional costs of early nutritional care are low, especially in frail malnourished patients. Kreuzenga H et al. (2005) Effectiveness and cost-effectiveness of early screening and treatment of malnourished patients. American Journal of Nutrition 82(5): 1082-1089.</td>
</tr>
<tr>
<td><strong>Occupational therapy</strong></td>
<td>Rapid access to equipment/adapts (can be done when pt at home to avoid delaying discharge consider cost benefits associated with this).</td>
<td></td>
<td>A study that explored the relationship between provision of equipment and reduction on care package costs and residential care found that over an eight week period cost savings to care packages through provision of equipment were over £60,000. (Hill, S (2007). Housing adaptations reduce the need for daily visits and reduce or remove costs for home care (savings range from £1,200 to £29,000 a year) (Heywood et al 2007).</td>
</tr>
</tbody>
</table>
## Occupational therapy

Support patients to re-engage with graded social activities.

Assist return to work or other/additional meaningful activity.

Work with the patient to assess what priorities and roles are most important to them including social and leisure.

Facilitate return to work through the provision of equipment/adaptations:

- Re-conditioning activity programme, including exercise to build physical tolerance levels
- Patient is less likely to require hospital admission or GP intervention if better able to cope with the treatment effects and has coping strategies.

<table>
<thead>
<tr>
<th>INTERVENTION IN PATHWAY</th>
<th>IMPROVING OUTCOMES</th>
<th>THE ECONOMIC ARGUMENT</th>
<th>CASE STUDIES</th>
</tr>
</thead>
</table>
| Occupational therapy    | There are over 700,000 people of working age who have had a diagnosis of cancer in the UK. Each year 109,000 people of working age are diagnosed with cancer. More than 90% of cancer patients’ households suffer a loss of income and/or increased costs as a direct result of cancer. Many people who have had cancer treatment want to go back to work when they feel fit and ready. However, evidence suggests that some are unable to return to work after a cancer diagnosis: cancer survivors are 1.4 times more likely to be unemployed than people who have not had cancer. **NCSI Work and Finance Workstream. Evaluation of the Vocational Rehabilitation Pilot Projects.** | The economic issues relating to vocational rehab are centred on the benefits to the individual. One of the early findings from the NCSI workstream is that vocational rehabilitation specialists have an important role in providing education and training for:  
- Health professionals, on the importance of work, the consequences for patients of employment difficulties, and on resources available.  
- Employers, including line managers, on supporting a person with cancer in the workplace, and on organisational policies, procedures and basic aspects of employment law. **NCSI Work and Finance Workstream. Evaluation of the Vocational Rehabilitation Pilot Projects.** | The National Cancer Survivorship Initiative has funded seven pilot sites across England to test a four-level model of vocational rehabilitation for people with cancer. An evaluation of these seven pilot sites is underway, to identify the benefits and costs of vocational rehabilitation for people with cancer. |
Orthotists can prevent further damage to irradiated skin and maintain tissue integrity through the identification of appropriate materials, thus ensuring the rehabilitation and re-ablement process is not hindered.

<table>
<thead>
<tr>
<th>INTERVENTION IN PATHWAY</th>
<th>IMPROVING OUTCOMES</th>
<th>THE ECONOMIC ARGUMENT</th>
<th>CASE STUDIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orthotists</td>
<td>To individual patients the correct supply and fitting of orthotic devices can be a major factor in the management of their condition or the prevention of future problems. The technology of orthoses can appear deceptively simple, such as foot insoles or orthoses made for back problems but the selection and fitting of the most appropriate device requires detailed knowledge of the functioning of the musculo-skeletal system. Many orthotic devices have to be fitted specifically for the individual patient. Delivery of a service of this kind can only be carried out by those with a proper professional training in orthotics and a broad experience of the range of products available. Orthotic services can assist in the achievement of major policy objectives of the NHS, including reducing referral to treatment times; facilitating choice for people with long term conditions; and providing seamless health care with service provision by those best placed to meet patient needs. Orthotic services can play an important role in meeting the NHS objective of keeping people mobile and independent and therefore reducing the need for acute treatment or social care services.</td>
<td>A survey of 6 trusts involved in the 2004 Pathfinder project which highlighted that for every £1 spent on orthotic services the NHS saves £4. With current expenditure on orthotic service provision estimated at £100 million this represents a.</td>
<td>Hutton and Hurry 2009, Orthotic Service in the NHS: Improving Service Provision. York Health Economics Consortium.</td>
</tr>
</tbody>
</table>
## Treatment (4 of 8)

<table>
<thead>
<tr>
<th>INTERVENTION IN PATHWAY</th>
<th>IMPROVING OUTCOMES</th>
<th>THE ECONOMIC ARGUMENT</th>
<th>CASE STUDIES</th>
</tr>
</thead>
</table>
| **Therapeutic radiographers**  
Pre-treatment phase | NRAG have provided a number of opportunities for cost effective service delivery including the use of radiographers supervising Band 4 Assistant Practitioner roles. | Therapeutic Radiographers can be up skilled to take informed consent for some radiotherapy treatments. This frees clinical oncologist time in line with NRAG recommendations. |  |
| **Unscheduled treatment** | Radiotherapy can provide targeted pain control and symptom relief in palliative care for bone metastases.  
Emergency Spinal Cord Compression treated within 24 hours up to 48 hrs can have a significant impact on a patients health status, without which there is a risk of deterioration into permanent paralysis, and potential loss of function below tumour site, which may lead to urine incontinence, impaired sensation/touch with significant cost implications for future patient care together with the negative psychological impact of such a trauma and the social welfare implications. | The difference in hourly cost of a reporting radiographer and a radiologist is around £120, based on the cost of a radiographer at the mid-point of Agenda for Change Band 7 and a consultant radiologist.  
The potential saving from substituting radiographers for radiologists is only a realisable cash saving to the hospital if they subsequently reduce the number of radiologists they employ. It is more likely that this will be an opportunity cost saving, ie. the freeing up of this resource in the form of time available to radiologists to carry out other work. |  |
| **Palliative treatment** | Consultant Therapeutic Radiographers can release oncologist time in palliative lung treatments pathways, and enable the patient to commence radiotherapy sooner and maximise the use of high value equipment such as treatment planning units and linear accelerators as these patients can attend for treatment via radiographer lead clinics at times that the oncologist is not available. |  |  |
Radiotherapy is more cost effective than chemotherapy as chemotherapy is more invasive and its side effects incur significant pharmaceutical bed days and nursing costs.

Chemotherapy cures 7% of cancer, radiotherapy delivered by therapeutic radiographers should be used in over 50% of cancer patients and of these patients it contributes to cures in over 35% of patients with cancer. See Cancer Research UK.

Intensity Modulated Radiotherapy
The Cancer Research UK funded PASSPORT trial demonstrated cost savings and enhanced patient care by showing that, for head and neck cancer.

IMRT reduces the incidence of serious dry mouth after treatment from 71% to 29%, reducing the need for tube feeding at two years from around 20% to less than 5%. For prostate cancer, IMRT allows a dose escalation from 64Gy to 74Gy, leading to a 12% improvement in efficacy and halving the rate of side effects from 16% to <8% (Viani 2009 IJROBP).

Two areas of redesign and novel practice
i. Therapeutic radiographer led vaginal vault brachytherapy and
ii. New patient clinic for adjuvant radiotherapy. An evaluation audit of the new patient clinic is also be presented.

It was clearly apparent that if the treatment start times could be bought forward then the treatment could be delivered as a day procedure with the patient being discharged home early evening. This would not only reduce the overnight costs of a bed, but also allow 4 patients within 48 hours to be treated compared to 2 with a later treatment start time.

Review of the process led to support for the Advanced Practitioner within Gynaecological oncology working closely with the clinical oncologist to design a competency programme that would facilitate development of skills to allow the complete process to be undertaken by a radiographer.
Therapeutic radiographers (contd.)

Two areas of redesign and novel practice

i. Radiographer led vaginal vault brachytherapy and

ii. Radiographer led new patient clinic for adjuvant radiotherapy. An evaluation audit of the new patient clinic is also be presented.

It was clearly apparent that if the treatment start times could be bought forward then the treatment could be delivered as a day procedure with the patient being discharged home early evening. This would not only reducing the overnight costs of a bed, but also allow 4 patients within 48 hours to be treated compared to 2 with a later treatment start time.

Review of the process led to support for the Advanced practitioner within Gynaecological oncology working closely with the clinical oncologist to design a competency programme that would facilitate development of skills to allow the complete process to be undertaken by a radiographer.

<table>
<thead>
<tr>
<th>INTERVENTION IN PATHWAY</th>
<th>IMPROVING OUTCOMES</th>
<th>CASE STUDIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Therapeutic radiographers (contd.)</td>
<td>It was clearly apparent that if the treatment start times could be bought forward then the treatment could be delivered as a day procedure with the patient being discharged home early evening. This would not only reducing the overnight costs of a bed, but also allow 4 patients within 48 hours to be treated compared to 2 with a later treatment start time.</td>
<td>Case study from Addenbrookes Gynaecological Oncology</td>
</tr>
</tbody>
</table>
|                         | Review of the process led to support for the Advanced practitioner within Gynaecological oncology working closely with the clinical oncologist to design a competency programme that would facilitate development of skills to allow the complete process to be undertaken by a radiographer. | i. Vaginal vault brachytherapy (BT):
|                         | High dose rate vaginal vault BT is used predominantly in the adjuvant setting for endometrial cancer. It may be used in conjunction with external beam radiotherapy, offering a boost to the top of the vaginal vault or alone to minimise the risk of recurrence within the vault for those women with low-intermediate risk endometrial cancer. The planning process involves vaginal examination at assess the capacity of the vagina followed by a sizing procedure, using dummy tubes, to measure the length and identify the diameter of treatment tube to be used. This process was historically carried out by the clinical oncologist or their registrar. In the late 1990's consideration was given to how this service could potentially improve the continuity, capacity and flexibility of the brachytherapy service. | |
|                         | At the time Low Dose Rate (LDR) was our only option for treatment resulting in treatment times of around 10-11 hours per patient. Due to the availability of medical staff treatment start times were inconsistent and often delayed until the afternoon which meant an overnight stay in hospital for the patient and a maximum of 2 patients treated in any 48 hour period. | |
|                         | It was clearly apparent that if the treatment start times could be bought forward then the treatment could be delivered as a day procedure with the patient being discharged home early evening. This would not only reducing the overnight costs of a bed, but also allow 4 patients within 48 hours to be treated compared to 2 with a later treatment start time. | |
|                         | Review of the process led to support for the Advanced practitioner within Gynaecological oncology working closely with the clinical oncologist to design a competency programme that would facilitate development of skills to allow the complete process to be undertaken by a radiographer. | |
|                         | Robust competency and training programmes are essential in providing and maintaining an equitable service across professional groups. A number of competencies and academic evidencing of clinical practice had already been attained prior to development of the radiographer led BT service and therefore only 2 additional competencies/training packages were identified. See Table 1. | |
| Competencies achieved   | Additional competencies identified | |
| Consent                 | Vaginal examination for sizing | |
| On-treatment review     | Brachytherapy | |
| Within the authors centre, High dose rate treatments are now delivered with up to 9 women requiring vaginal vault treatment per week. | |
Treatment (7 of 8)

INTERVENTION IN PATHWAY | IMPROVING OUTCOMES | CASE STUDIES
--- | --- | ---
**Therapeutic radiographers (contd.)** | It was clearly apparent that if the treatment start times could be bought forward then the treatment could be delivered as a day procedure with the patient being discharged home early evening. This would not only reducing the overnight costs of a bed, but also allow 4 patients within 48 hours to be treated compared to 2 with a later treatment start time. Review of the process led to support for the Advanced practitioner within Gynaecological oncology working closely with the clinical oncologist to design a competency programme that would facilitate development of skills to allow the complete process to be undertaken by a radiographer.

i. Radiographer led vaginal vault brachytherapy and

ii. Radiographer led new patient clinic for adjuvant radiotherapy. An evaluation audit of the new patient clinic is also be presented.

ii. Development of a radiographer led clinic for adjuvant RT in endometrial cancer. In July 2008 the UK’s first radiographer led clinic was established to manage women for consideration of adjuvant RT for endometrial cancer. All women diagnosed with an epithelial endometrial cancer are seen by the consultant radiographer following discussion at the Multi-disciplinary meeting. See fig 1.

The consultation involves:
- Full history
- Assessment of any pre-existing contraindications to pelvic radiotherapy.
- Discussion of histological findings
- Risks and benefits of 3 treatment options relevant to histology and patient
  - Active surveillance
  - Brachytherapy
  - EBRT
- Consent

Evaluation
To evaluate this novel service an audit of the quality of recorded consent was undertaken.

**Method**
New patient letters of all women with stage I endometrial cancer seen by the consultant radiographer between July 2008 and September 2009 were reviewed. Comparison was made to a previous audit undertaken by the oncology doctors between July 2006 and June 2007.

Audit standards
- Record of 3 treatment options discussed: 100%
- Risk of late toxicity assessed: 100%
- Record of discussion of treatment related late side effects: 100%

Results
Between July 2008 and June 2007, 22 new patients were seen by the oncology doctors and between 2008 and 2009 26 new patients were seen by the consultant radiographer. Results for treatment options discussed, risk of late toxicity and risk factors are shown in table.

<table>
<thead>
<tr>
<th>Treatment options discussed</th>
<th>Late side effects recorded</th>
<th>Risk factors recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultant oncologist</td>
<td>93% (13/14)</td>
<td>100% (14/14)</td>
</tr>
<tr>
<td>Oncology registrar</td>
<td>38% (3/8)</td>
<td>63% (5/8)</td>
</tr>
<tr>
<td>Consultant radiographer</td>
<td>96% (25/26)</td>
<td>100% (26/26)</td>
</tr>
</tbody>
</table>

Discussion
The quality of documented consent in the consultant radiographer letters was comparable to those by the consultant oncologists. Oncology registrars performed less well due to the learning curve during their placement. Education and training of registrars within the new patient clinic is essential to prevent deskilling and is now undertaken by the consultant radiographer.

Treatment choice (fig) was evenly distributed between the 3 treatment choices in the patients seen by the doctors however in the patients seen by the consultant radiographer, fewer women opted for EBRT. This may reflect the interpretation of the preliminary results of PORTEC II, suggesting that EBRT may not be necessary for patients with early endometrial cancer at moderate risk of local recurrence.
### Treatment (8 of 8)

<table>
<thead>
<tr>
<th>INTERVENTION IN PATHWAY</th>
<th>IMPROVING OUTCOMES</th>
<th>THE ECONOMIC ARGUMENT</th>
<th>CASE STUDIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical specialist radiographer in head and neck cancer</td>
<td>The aims of the audit were to quantify the number and types of enquiries/referrals received by the Clinical Specialist Radiographer in Head &amp; Neck (H&amp;N) cancer via email telephone and bleep; to identify the origin of enquiries/referrals and what they were in relation to; demonstrate the response or action required; identify the appropriateness of the enquiries/referral; demonstrate a change in referral pattern and quantify the complexity of enquiry/referrals received. Data collection period September 2004 – January 2008</td>
<td>A total of 1755 enquiries/referrals were received between Oct 04 to Dec 05 and a total of 2392 enquiries/referrals between Aug 05 and Jan 08. The enquiries/referrals were triaged as general or complex- General – appointments, XRT pathway, acute toxicity up to and including grade 2, physio/social needs, dental referrals, AHP referrals, routine post treatment follow up, blood &amp; biochemistry monitoring, health promotion. Complex- Grade 3 toxicity, disease recurrence, disease progression, decision to treat &amp; informed consent, chemotherapy, airway management, bleed management, enteral feeding, re-irradiation &amp; surgical voice restoration. General enquires are effectively dealt with by the radiographers on the H&amp;N dedicated treatment units, the pre treatment H&amp;N referral pathway, increased consultation with the H&amp;N radiographer pre treatment, the wkly multiprofessional H&amp;N meeting and the oral assessment tool. Society of Radiographers Professional officer</td>
<td></td>
</tr>
</tbody>
</table>
Survivorship (1 of 3)

**Dietitians**
Assess nutritional status and advise on alternative diets, feeding, supplements and alternatives as appropriate.


The Ryplkema study found that costs were not significantly different for the two sets of interventions. The conclusion was that an early interdisciplinary intervention approach can be effective in reducing protein-energy malnutrition and related hospital-acquired infections and appears to be economically feasible. G. Ryplkema et al. Cost-effectiveness of an interdisciplinary intervention in geriatric inpatients to prevent malnutrition. Journal of Nutrition, Health and Aging. 2004.

A protocol was developed which included screening for malnutrition, dysphagia and dehydration on admission, followed by immediate interventions. The study found that there was a 0.8kg loss in average weight in the standard care group and a 0.9kg gain in the intervention group. G. Ryplkema et al. Cost-effectiveness of an interdisciplinary intervention in geriatric inpatients to prevent malnutrition. Journal of Nutrition, Health and Aging. 2004.

**Occupational therapy and physiotherapy**
PTs and OTs can assess functional issues caused by the late effects of cancer treatments ie altered motor, neurological, musculo-skeletal, cognitive, perceptual, visual and sensory function.

Reassess patients ability to function and address changes in status/situation as required. Reduces longer term care needs and associated costs. OTs can provide assessments and advice about work and the work environment and can advise/procure ergonomic equipment or adaptations that are required for the patient to continue previous employment or be supported to work.

Oncology rehabilitation interventions are important because many cancer survivors live with considerable disability and lasting effects of treatment. The specific deficits amenable to rehabilitation in cancer survivors are:

- Pain and musculoskeletal issues;
- Deconditioning and endurance deficit;
- Fatigue;
- Balance and falls;
- Lymphedema;
- Psychosocial.


Research by the think tank Policy Exchange estimates productivity losses from cancer survivors being unable to undertake paid or unpaid work equated to £5.49 billion in 2008.

36% of cancer survivors who were in work when diagnosed had to give up work completely as a result of their diagnosis. A further 21% had to change their roles. Many also say their working life has deteriorated.

MacMillan.

Economic modelling commissioned by Macmillan has also shown that if just half of breast cancer survivors who initially return to work but then leave were helped to stay in work, the economy could save £30 million every year. MacMillan.

Oncology rehabilitation interventions are important because many cancer survivors live with considerable disability and lasting effects of treatment. The specific deficits amenable to rehabilitation in cancer survivors are:

- Pain and musculoskeletal issues;
- Deconditioning and endurance deficit;
- Fatigue;
- Balance and falls;
- Lymphedema;
- Psychosocial.


Research by the think tank Policy Exchange estimates productivity losses from cancer survivors being unable to undertake paid or unpaid work equated to £5.49 billion in 2008.

36% of cancer survivors who were in work when diagnosed had to give up work completely as a result of their diagnosis. A further 21% had to change their roles. Many also say their working life has deteriorated.

MacMillan.

Economic modelling commissioned by Macmillan has also shown that if just half of breast cancer survivors who initially return to work but then leave were helped to stay in work, the economy could save £30 million every year. MacMillan.
## Occupational therapy
Consider the patient’s longer term goals in relation to finance and refer on to support agencies as appropriate.

A review of the factors that influence the return to work of cancer survivors found that the mean return to work was 62%. The following factors were negatively associated with a return to work: a non-supportive work environment; manual labour; and having head and neck cancer.

A study of 41 cancer survivors found that the principle motivations for returning to work were a quest for normality and financial pressures. One barrier to returning to work was the lack of medical advice from cancer specialists and GPs regarding the appropriate time to get back to work. A good relationship with their employer/manager was a major influence on returning to work.

*E Spelten et al. Factors reported to influence the return to work of cancer survivors: a literature review. Psycho-oncology. 2002.*


## Physiotherapy
Metastatic Spinal Cord Compression (MSCC) as per care pathway.
Reduce the delay in picking up secondary cancers and improve outcomes for patient and need for health/social care.

The provision of good advice and information, referral to local support services and accessible rehabilitation services will enable people to better manage own condition & symptoms through recognising signs & having access back to AHPs.

Manage effects of palliative radiotherapy.

The possible consequences of delaying the treatment of MSCC include paraplegia or quadriplegia, loss of control of bladder and bowel function with associated quality of life. Early diagnosis is essential as the prognosis is severely impaired once paralysis occurs.

*Metastatic spinal cord compression. Greenhalgh et al. 2010.*

The cost of developing the Red flag card to raise awareness of ‘suspicion’ of MSCC is 8.8p each, and 9,000 have been circulated in community services by Greater Manchester and Cheshire Cancer Network. The cost of this (around £800) would be far outweighed by the costs saved if even one case of MSCC is diagnosed early or prevented as a result.

*Metastatic spinal cord compression. Greenhalgh et al. 2010.*

The Greater Manchester and Cheshire Cancer Network has, in collaboration with NHS Bolton and the University of Central Lancashire, developed a credit card bullet point clinical guide for non-expert clinicians for use in the clinical setting in primary care.

*Metastatic spinal cord compression. Greenhalgh et al. 2010.*
## Survivorship (3 of 3)

<table>
<thead>
<tr>
<th>INTERVENTION IN PATHWAY</th>
<th>IMPROVING OUTCOMES</th>
<th>THE ECONOMIC ARGUMENT</th>
<th>CASE STUDIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prothetists</strong></td>
<td>Patients who experience limb amputation have the best rehabilitation outcomes where they mobilised as soon as possible, becoming psychologically and socially more confident, resulting in an easier transition in returning to work, or to retraining with less dependency on social services for care and mobility and incapacity benefits.</td>
<td>The CIPD annual survey absence report 2009 found that the average level of employee absence was 7.4 days per employee and the average cost per employee per year was £692. The cost included elements such as occupational and statutory sick pay, the cost of replacement labour, overtime costs and the cost of reduced performance. That equates to an average cost of absence per day per employee of £94 and an overall cost to UK employers of around £875 million. A reduction of absence by 1% would produce a productivity benefit of around £9 million. Chartered Institute of Personnel and Development. Absence management – annual survey report 2009.</td>
<td></td>
</tr>
</tbody>
</table>

Prosthetists often see stump condition change before any other professional has been asked to assess it. Action at this stage can prevent deterioration of skin integrity. This can enable the patient to continue limb wearing which otherwise may lead to weeks of non-limb wearing.

**Prothetists**

1,088 amputees were contacted in the largest carried out in Europe on the subject of phantom pain and demonstrates that such pain is common. The survey shows that about 75% of amputees suffer from phantom pain. Expensive, often unsatisfactory long-term therapies and pharmaceuticals are frequently used to treat phantom pain. A study of treating phantom pain with a textile, electromagnetically shielding residual limb liner showed a high economic benefit: expensive conventional therapies significantly exceed the annual therapy costs of care using relax liners. There is a high potential for the prosthetic profession to improve quality of life for a high number of their patients that experience phantom pain.

From BAPO website: Results of a Nationwide Survey in Germany to Deduce Levels of Phantom Pain.


References


Psychosomatic Medicine, 62(5), 613-22.


Interventions to enhance return-to-work for cancer patient, de Boer A, Taskila T, Tammenga S, Frings-dresen M, Feurstein M, Verbeek J (2011), Cochrane Database of Systematic Reviews, Feb (2) CD007569.


Improving sleep quality for cancer patients: benefits of a home-based exercise intervention, Tang MF, Liou TH, Lin CC,(2010), Supportive Care in Cancer, 18(10),1329-39.


Improving sleep quality for cancer patients: benefits of a home-based exercise intervention, Tang MF, Liou TH, Lin CC,(2010), Supportive Care in Cancer, 18(10),1329-39.


Retrospective trial of complete deconstructive physical therapy for lower extremity secondary lymphedema in melanoma patients, Carmeli E, Bartolotti R, (2011), Supportive Care in Cancer 19: 141-147.

Effectiveness of behavioral techniques and physical exercise on psychosocial functioning and health-related quality of life in breast cancer patients and survivors—a meta-analysis. Duijts SF, Faber MM, Oldenburg HS, van Beurden M, Aaronson NK.(2011), Psycho-Oncology, 20 (2), 115-26

Absence management – annual survey report 2009. Chartered Institute of Personnel and Development

British Society of Rehabilitation Medicine Guidelines http://www.bsrn.co.uk/Publications/Publications.htm Accessed at British Society of Rehabilitation Medicine, 6.10.11


Cancer care toolkit


Art Therapy offer psychological benefits to cancer patients: a preliminary study which offer rehttp://www.pennsybrincancer.org/upload/docs/1136/Art_therapy_ebi2b.pdf


Testing the efficacy of a creative arts intervention with family care givers of patients with cancer Walsh S.M., Martin S.C., Schmidt L.A.: Journal of Nursing scholarship 2004: 36 (3) 214 – 219


Natural killer cells and lymphocytes increase in women with breast cancer following massage therapy. Hernandez-Reif M et. al. (2005). International Journal of Neuroscience, 115(4), 495-510.


A randomized controlled trial of supplemental oxygen versus air in cancer patients with dyspnea. Bruera E et al. (2003). Palliative Medicine, 17(8), 659-63.


Interventions to enhance physical and psychological functioning among younger women who are ending nonhormonal adjuvant treatment for early-stage breast cancer. Scheier MF et al. (2005). Journal of Clinical Oncology, 23(19), 4298-4311.


Unpublished study: Quantifying nutritional support needs of patients with thoracic cancer: findings of a dedicated rehabilitation service. A Wilcock (2011) personal communication


General References
Supporting and Improving Commissioning of Cancer Rehabilitation Services National Cancer Action Team November 2009
AHP Federation www.ahpf.org.uk
Macmillan Cancer Support: Specialist Lymphoedema Services: An Evidence Review August 2011
RNIB http://www.rnilb.org.uk/Pages/Home.aspx
British and Irish Orthoptic Society http://www.orthoptics.org.uk/
Improving outcomes: a strategy for cancer. Department of Health January 2011
Cancer and Palliative Care Rehabilitation: A Review of the Evidence, National Cancer Rehabilitation Advisory Board, January 2012.

This toolkit has been endorsed by: