

Greater Glasgow and Clyde NHS Board

**Board Meeting
20 December 2016**

Paper No. 16/86

Medical Director

Beatson West of Scotland Cancer Centre (BWoSCC) - Report to Healthcare Improvement Scotland (HIS)

Recommendation: The NHS Board is asked to note the recommendations of the BWoSCC Steering Group and that a further update Report has been submitted to HIS.

1. Background

In May 2015, Healthcare Improvement Scotland (HIS) were made aware of potential patient safety concerns that had been raised by Clinicians working at the Beatson West of Scotland Cancer Centre (BWoSCC) resulting in an enquiry visit in July 2015.

Following the visit, HIS published their report which included the following two recommendations:

- NHS Greater Glasgow and Clyde should urgently agree and implement a risk-assessed, safe and sustainable model for the recognition and management of acutely unwell patients with oncological and haemato-oncological conditions coming into the Beatson and Queen Elizabeth University Hospital;

NHS Greater Glasgow and Clyde should put into place governance arrangements that regularly monitor the effectiveness of the implementation of the model of care.

The BWoSCC Future Steering Group was established to address these two HIS recommendations with a specific remit to agree a sustainable future vision for the BWoSCC examining short, medium and long term strategies.

2. BWoSCC Steering Group

The BWoSCC Steering Group has met seven times since February 2016 and work has progressed via five Sub Groups:

- Acute Oncology Admissions Pathway/Process;
- Deteriorating Patients;
- Semi Urgent/Elective Specialty Support to BWoSCC;
- Oncology Support to Acute Sites; and
- Role of Trainees/Training.

The Steering Group established a Clinical Reference Group to provide clinical opinion and advice regarding emerging models of care as well as engaging six Clinical Experts from across a range of relevant specialties in the UK (Intensive Care, Haemato-Oncology, Medical and Clinical Oncology and Acute Medicine).

The output from each of the sub groups was presented and discussed at an extended meeting of the BWoSCC Future Steering Group and the Clinical Reference Group on the 14th June 2016.

The BWoSCC then produced a full report which was considered at their meeting in August 2016 and circulated thereafter for comment.

The BWoSCC Future Steering Group have concluded that arrangements that have been put in place have improved and transfer arrangements have been demonstrated to be safe with regard to the management of the acutely deteriorating patient, but remain sub-optimal for the delivery of oncology services.

The BWoSCC Future Steering Group have therefore, recommended:

- Co-location of non surgical oncology services with acute services including Critical Care, medical and surgical specialties should be pursued at the earliest opportunity;
- That the longer term strategy outlined above requires to be underpinned in the interim with more robust and sustainable clinical management procedures and processes that the sub groups have developed, building on work that was already underway;
- That the following should be maintained and enhanced: continued on site access to the identified skill set to support the high acuity unit with options to provide a more sustainable service continuing to be explored; improved access to regular on-site medical and surgical support; implementation of the acute oncology service at the QEUH that, if positively evaluated, is extended to other acute sites within NHSGGC and across the region as part of a wider, regionally agreed, strategy

The report of the BWoSCC Steering Group has since been submitted to HIS as part of the Board's latest update with regard to progress against the recommendations set out in October 2015. The report is attached.

3. In addition NHS Greater Glasgow and Clyde was asked to review its Area Clinical Forum (ACF) and supporting advisory structure to ensure appropriate engagement across its professional advisory committees using the guidance set out in Chief Executive Letter (CEL) 16 (2010)10 as a basis for this review. Board officers met the ACF members to discuss the circular and the review. The Action Plan was agreed by the ACF at its October 2016 meeting and a summary of this Action Plan was then submitted to HIS as part of the reporting framework on the Beatson Oncology Actions.

4. NHS Greater Glasgow and Clyde was asked to take urgent action to restore and rebuild working relationships and respect between consultants at the Beatson and the NHS Greater Glasgow and Clyde Management Team. Human Resources supported by the local team considered ways in which to improve communication and engagement at local level. A series of meetings have taken place with staff to explore the best way forward and currently there are a range of actions being taken forward by the local team supported by Organisational Development. These include:

- Discuss and agree how to improve engagement within the service.
- Review the decision making process and how decisions are communicated.
- Consider arrangements for joint working/cross team working to address concerns or service challenges.
- Ensure accurate and meaningful information to inform all the above and identify what organisational development support is required to further promote effective team working.

The local team are currently finalising the preferred model of engaging to ensure it can deliver a sustainable approach to support the future change programme.

5. Planning Process

The co-location of specialist oncology with acute services will be taken forward as part of the wider acute services planning. This work is due to commence early in 2017 with specialist oncology services now clearly embedded within this process.

Work will continue to progress the interim recommendations as described above to improve on the current arrangements for the BWoSCC.

6. Recommendation

The NHS Board is asked to note the recommendations of the BWoSCC Steering Group and that a further update Report has been submitted to HIS.

1. Introduction

This paper sets out the recommendations of the Beatson West of Scotland Cancer Centre Future Steering Group to provide a sustainable model for patients requiring a higher level of care currently available either within the Beatson West of Scotland Cancer Centre (BWoSCC) or Gartnavel General Hospital (GGH). It describes the high level case for change that will ensure that the BWoSCC continues to function as an internationally renowned Cancer Centre delivering a comprehensive non-surgical clinical service to cancer patients with an extensive associated research portfolio.

2. Background

The BWoSCC is one of the busiest non surgical Cancer Centres in The United Kingdom (UK) providing services for the population of the West of Scotland together with some national services.

The BWoSCC traditionally provided Level 1 care on site and transferred patients to the High Dependency Unit (HDU) within the adjacent Gartnavel General Hospital, transferring those that required Level 3 support to the former Western Infirmary Hospital. Whilst HDU provided BWoSCC with onsite access to level 2 care, the service did not meet Society of Intensive Care Medicine Guidelines with regard to staffing or infrastructure.

In 2015, as part of the reconfiguration of services within NHS Greater Glasgow and Clyde (NHSGGC) the HDU was withdrawn from the GGH site. Critical Care facilities for South/West Glasgow were consolidated on the Queen Elizabeth University Hospital (QEUEH) site to enable full Intensive Care standards to be met. This resulted in no on-site access to the escalated care resource previously available to BWoSCC.

Rapid and reliable pathways were put in place for deteriorating patients within the BWoSCC to transfer to the medical, surgical and critical care facilities at QEUEH, as well as an infrastructure and framework for assessing and supporting deteriorating patients, i.e. Level 1 care on-site, and stabilisation prior to transfer off-site.

The BWoSCC High Acuity Unit (HAU) and Critical Care Outreach (CCO) service was established on the 29th May 2015, as part of the reorganisation of acute services in NHSGGC. This consists of 24/7 critical care and oncology nursing support and access to 24/7 anaesthetic cover on the GGH site, which is currently delivered via ad hoc locum arrangements. Patients are reviewed under the 24 hour oncology/haematology medical on call arrangements, with access to the critical care medical team at the QEUEH as required for advice.

In May 2015, Healthcare Improvement Scotland (HIS) was made aware of potential patient safety concerns raised by clinicians working at the BWoSCC.

Following an enquiry visit to the BWoSCC in July 2015, HIS published their report in October 2015 which included the two following recommendations:

Recommendation 1: Management of acutely unwell patients

NHSGGC should urgently agree and implement a risk-assessed, safe and sustainable model for the recognition and management of acutely unwell patients with oncological and haemato-oncological conditions coming into the BWoSCC and QEUEH.

Recommendation 2: Referral, procedures and clinical governance

NHSGGC should put into place governance arrangements that regularly monitor the effectiveness of the implementation of the model of care (referred to in Recommendation 1).

The BWoSCC Future Steering Group was established to address these two HIS recommendations, with a specific remit to agree a sustainable future vision for the BWoSCC, examining short, medium and long terms strategies. Work has been progressed via a number of sub groups with input from external advisors situated elsewhere in the UK. The Steering Group has also established a Clinical Reference Group to provide wider clinical opinion and advice regarding emerging models of care (Membership is detailed in Appendix One).

3. Current Service

3.1 Overview

Out of 60 Cancer Centres in the UK, the BWoSCC is the second largest Radiotherapy Centre and one of the busiest with regard to SACT activity. Figures 1 and 2 below show activity levels for the top 10 Centres in 2015/16.

Figure 1: Radiotherapy Activity Across the Top 10 Cancer Centres in the UK (Machine attendances and number of Linacs)

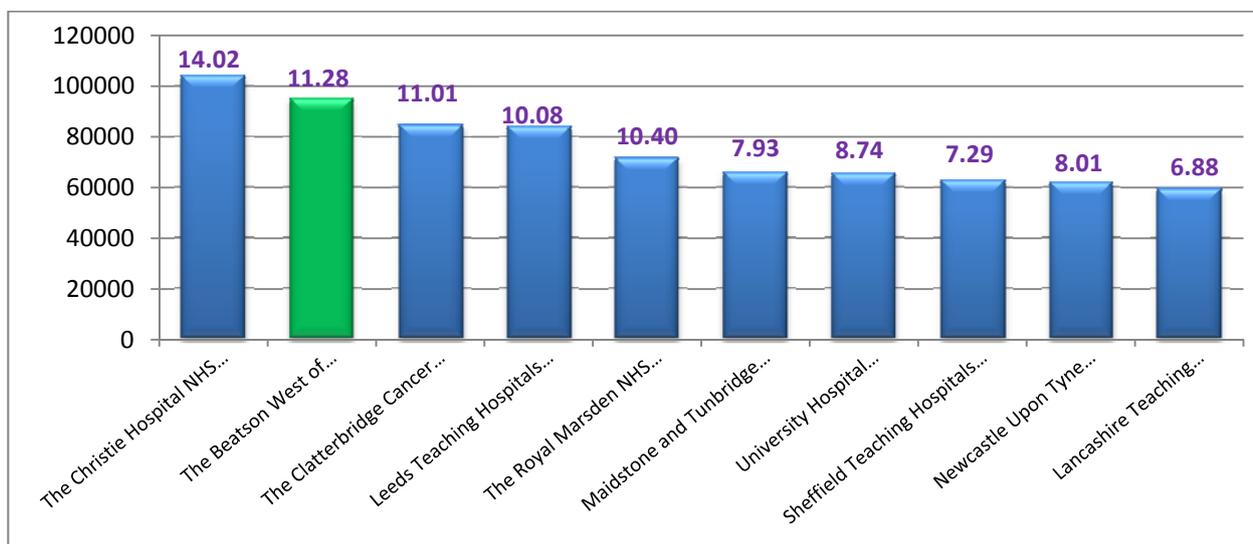
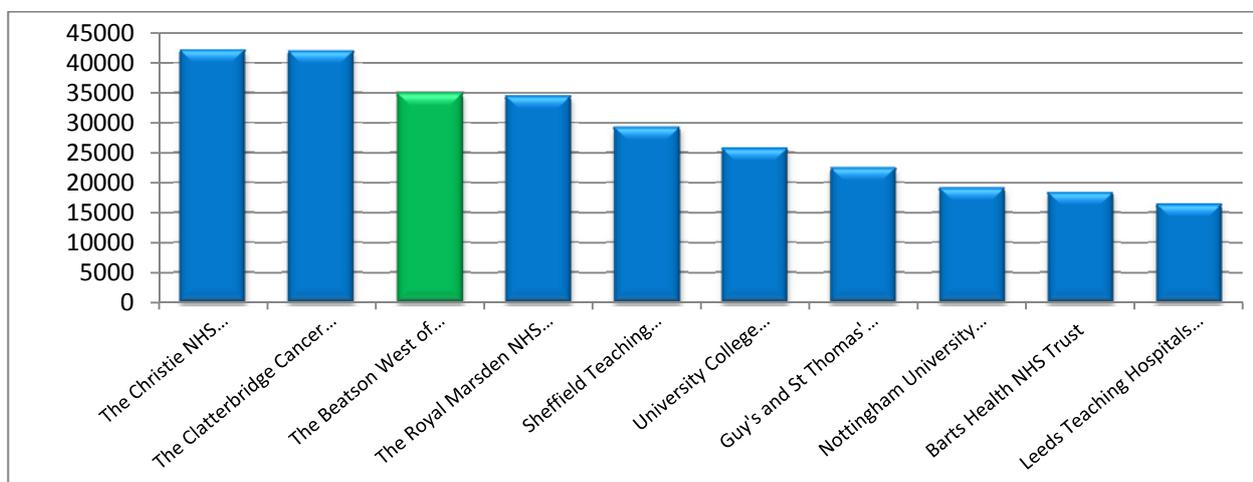


Figure 2: Systemic Anti Cancer Therapy (SACT) Activity Across the Top Ten Cancer Centres in the UK (Chemotherapy Cycles)



The BWoSCC delivers all of the radiotherapy, including paediatrics, and much of the chemotherapy, biological agents and new, emerging, immunotherapies to the population of the West of Scotland, with a catchment area of 2.5 million people, which is around 50% of Scotland's population. In addition, the BWoSCC provides a range of specialist services on a national basis and houses the Regional Teenager and Young Adult service. Each year the BWoSCC sees more than 8,000 new patients and delivers more than 34,000 cycles of chemotherapy and 6,800 courses of radiotherapy.

The BWoSCC is a networked Centre based within NHSGGC on the GGH Hospitals campus and includes non-surgical specialist oncology and clinical haematology. Equipped to an extremely high standard, it has 151 inpatient beds (including Haemato-Oncology), 48 chemotherapy stations and 11 linear accelerators for delivering radiotherapy.

While the main BWoSCC is on the GGH site it also runs a radiotherapy satellite unit in Lanarkshire. The Lanarkshire Beatson is based at Monklands General Hospital in Airdrie, providing a further 2 linear accelerators. The BWoSCC also provides a number of outreach oncology clinics across the Network in other general hospitals across NHSGGC, NHS Ayrshire & Arran, NHS Forth Valley, and NHS Lanarkshire.

3.2 Activity

The BWoSCC activity is currently commissioned by the 4 West of Scotland NHS Boards and National Services Scotland (NSS), national services include:

- Adult BMT;
- Ophthalmic Oncology;
- Prostate Brachytherapy

In addition to these recognised National Services, the Beatson West of Scotland Cancer Centre is often asked to provide expert opinion and treatment for patients nationally for the following indications:

- Relapsed Germ cell tumours
- Complex Paediatric and young adult cases
- Complex Sarcoma patients

Professional opinion is sought in these complex cases due to the recognition of supra-regional expertise in the Centre. Due to the nature of these cases additional medical, surgical and critical care support is often needed.

3.2.1 Oncology

Based on Scottish Morbidity Record (SMR01) data, there were a total of 5,111 inpatient episodes at BWoSCC in 2015/16, an increase of 2% on the previous year.

Of the 5,111 episodes, 43% were emergency presentations (n= 2,201) and 57% (n=2,910) elective. 48.2% of emergency presentations were admitted via the Acute Oncology Assessment Unit (AOAU) at BWoSCC (n= 1,061) with 51.8% (n=1,140) from clinic, home or transfer from another Hospital via the 'ASAP' list.

Highland	53	20	73	5.48
Grampian	9	1	10	0.75
Lothian	17	12	29	2.18
Tayside	12	18	30	2.25
Western Isles	4	11	15	1.13
Dumfries & Galloway	27	6	33	2.48
Borders	3	0	3	0.23
Orkney	0	0	0	0
Shetland	0	0	0	0
Others	0	0	0	0
Total Episodes OUTWITH WoS Boards	129	69	198	14.85

BOARD OF RESIDENCE	PATIENT TYPE			% of Total
	Elective	Emergency	Total	
Ayrshire & Arran	46	16	62	4.65
Forth Valley	39	15	54	4.05
Lanarkshire	114	58	172	12.90
Total Episodes WoS Boards (Exc. NHSGGC)	199	89	288	21.61

BOARD OF RESIDENCE	PATIENT TYPE			% of Total
	Elective	Emergency	Total	
Total Episodes NHSGGC	535	312	847	63.54

TOTAL BWoSCC DELIVERED EPISODES **863** **470** **1333**

36% (n=486) of total inpatient episodes were non NHS Greater Glasgow and Clyde patients, 21.61% (n=288) of all inpatient activity came from the non GG&C West of Scotland Health Boards and 14.85% (n=198) outwith.

3.2.3 Radiotherapy Activity

Radiotherapy is primarily delivered on an outpatient basis (88% of all activity in 2015/16). Most typically inpatient radiotherapy is delivered in the following scenarios:

- Elderly/Infirm;
- Certain Palliative treatments;
- Acutely Unwell e.g. spinal cord compressions;
- Geographical Reasons;
- Certain Brachytherapy treatments;
- Certain regimes e.g. CHART which is delivered 3 times a day over 10 days.

Table 3: All Radiotherapy delivered at BWoSCC (Ex Lanarkshire) By Fractionation

Radiotherapy Activity		
	Fractions	% of Activity
Inpatient	11,520	12
Outpatient	81,920	88
Total	93,440	100

3.2.4 High Acuity Unit/ Critical Care Outreach

The BWoSCC High Acuity Unit (HAU) and Critical Care Outreach (CCO) service was established on the 29th May 2015, as part of the reorganisation of acute services in NHS GGC. This consists of 24/7 critical care and oncology nursing support and access to 24/7 anaesthetic cover on the GGH site, which is currently delivered via ad hoc locum arrangements.

In its first year of operation, the HAU has admitted 253 patients and 2,969 outreach visits have been provided by the CCO Team.

The HAU/CCO service is supported 24/7 by an onsite anaesthetic consultant. There have been a total of 184 visits to the BWoSCC by anaesthetic staff between June 2015 and 30th June 2016. The primary reason for anaesthetic input is noted in Table 4 below.

Table 4: Primary Reason for Anaesthetic Review

Primary Reason for Anaesthetic Review	Number of visits
Acute Deterioration	63
Pre transfer assessment / Stabilisation	30
Central or Peripheral Access issues	16
Airway Risk	15
Support decision to escalate or transfer (or not)	15
Arrhythmia	14
Peri arrest or Cardiac Arrest call	10
CVS instability	13
Intubation performed +/- Lines and vaso-active drug	3
Risk associated with electrolyte abnormality	3
Escort to CT (Due to clinical risk)	2
TOTAL	184

3.2.5 Patient Transfers

Over the same period, a total of 114 patients being managed under the CCO team were transferred for escalated care at the QEUH:

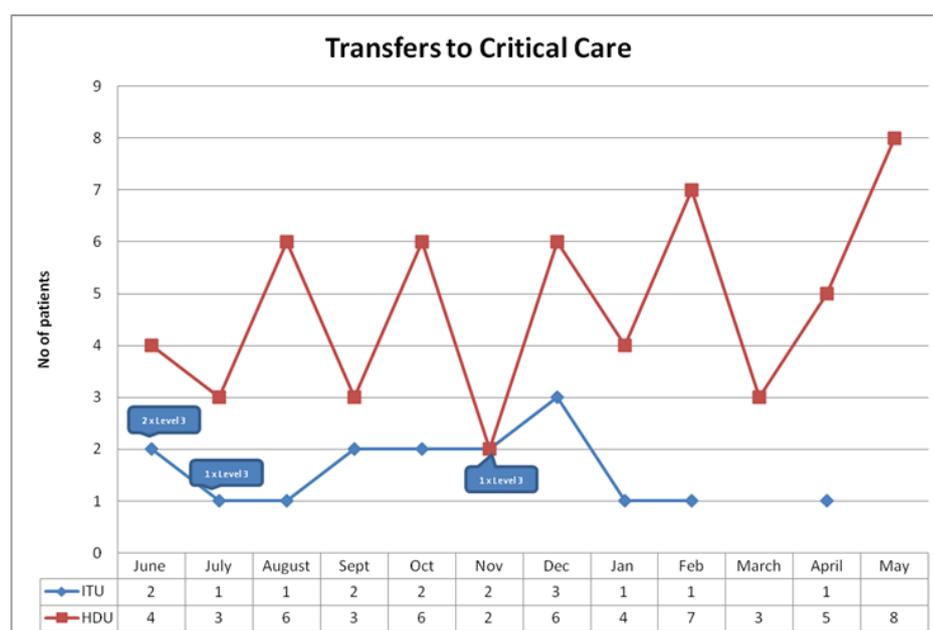
Table 5: Transfers to Critical Care and Other Specialties

Transfers		Transfers to	
Transfers to Critical Care	74	57 HDU	17 ITU
Transfers to other specialties	40	7 x Respiratory 6 x Surgery 12 x Cardiology/CCU 6 x Endoscopy/U GI 4 x ARUs	1 x Neuro / Stroke 1 x Ortho 1 x Fertility 1 x Renal 1 x Urology
Total transfers	114		

Therefore, an average of 9.5 patients are transferring from this service to QEUH per month, 6.2 for critical care and 3.3 for escalated medical or surgical care.

Figure 3 shows the actual Critical Care transfers per month for the same time period. A total of 3 patients have required intubation and ventilation on-site prior to transfer.

Figure 3: Critical Care Transfers per Month (June 2015-February 2016)



The number of patient transfers highlighted above relate only to patients currently under the HAU/CCO team with further patients requiring medical, surgical and diagnostic support transferred direct from inpatient wards.

3.2.6 Clinical Trials

Research activity is extremely important to the BWoSCC. High levels of participation is correlated with improved patient outcomes and an active trials environment is essential for attracting and retaining high calibre staff and for maintaining collaborations with Glasgow University as well as UK and International research networks.

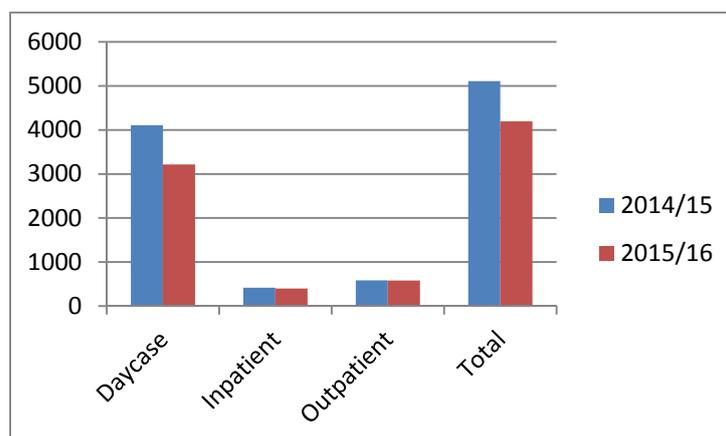
Including Solid Tumour and Haemato-Oncology there were 127 active trials within BWoSCC in 2015 of which 11.8% (n=15) were phase one (first in man). A summary of clinical trials activity is shown in Table 6 below:

Table 6: Clinical Trials Activity 2015

Recruiting Trials	127
Commercial Trials	40
Patients Recruited - Commercial Trials	147
Patients Recruited - Non Commercial Trials	786
Total Patients Recruited	933

Figure 4 illustrates the level of trial activity expressed by number of episodes. In 2014/15 and 2015/16 this equated to 13.3% and 10.5% of the total SACT activity of the BWoSCC respectively.

Figure 4: Level of Trial Activity Expressed by Number of Episodes for 2014-2016



4. Strategic Context

As a comprehensive Cancer Centre, one of the BWoSCC strategic aims is to maximise the opportunities presented by new treatment techniques and technologies while delivering integrated care across the whole pathway.

4.1 Horizon Scanning

Access to new cancer medicines has increased recently with changes to the SMC approvals process seeing an increasing number of patients accessing treatment. Increasing numbers of patients are now getting access to 2nd and 3rd line therapies that had not previously been available.

Precision medicine, tailored to an individual patient's biology and pathology, is a key theme in research and clinical trials. Linked to this are new systemic anti cancer treatment such as gene and immunotherapies.

The BWoSCC needs to be mindful of this changing landscape and changing treatments and technologies as it plans for the future.

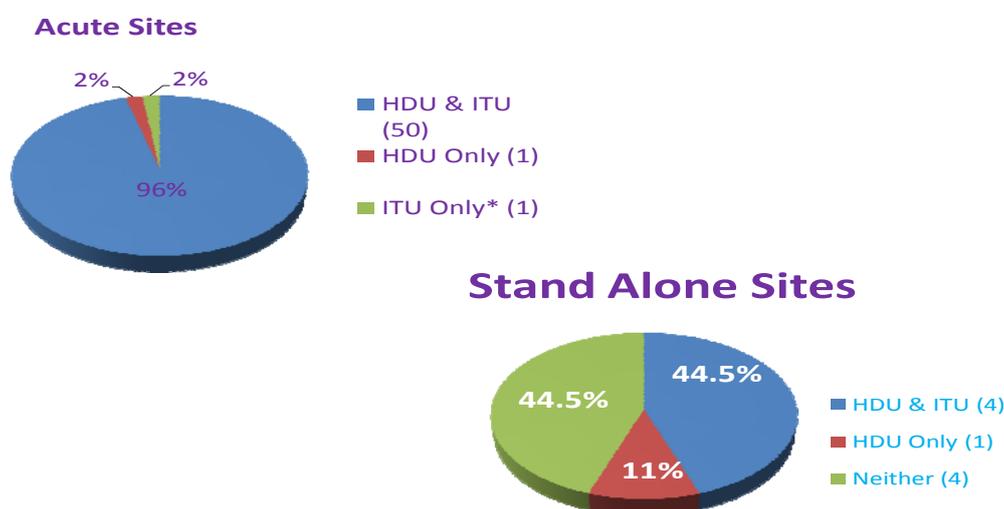
One example would be CAR T-Cell therapy, with clinical trials proving successful primarily in Haemato-Oncology (ALL), they have now expanded to solid tumour oncology e.g. Hepatocellular Cancer. This therapy development will require ready access to a range of acute services including critical care to manage the significant toxicity and related side effects.

The same is true for Radiotherapy with more complex planning and treatments being applied to palliative patients and therefore, a very sick cohort of patients to be admitted for palliative treatments. The wide scale adoption of Intensity Modulated Radiotherapy (IMRT) for radical treatments together with other developments, such as hypofractionation, will open the way for increases in the use of IMRT in patients who previously could only be treated palliatively. In the long term, it is expected that IMRT will be used for the majority of palliative cases within the next 5-10 years. These changes are expected to allow patients to live longer, with a higher quality of life, however, treated multiple times rather than one simple treatment as at present. BWoSCC currently delivers over 3,000 episodes of palliative radiotherapy and therefore, a significant growth in demand for in-patient admission and management of un-well patients can be predicted.

4.2 UK Benchmarking

Work was undertaken to benchmark the services provided by the BWoSCC against the other UK Cancer Centres. Of the 60 Cancer Centres in the UK, 85% are co-located with acute Hospitals and have on-site access to both critical care and a full range of surgical and medical specialties, whilst 15% are on standalone sites, as illustrated in Figure 5.

Figure 5: Breakdown of Cancer Centres Co-located on Acute Sites and Standalone



* Guys Hospital has a day unit for cancer care, has ITU on site but HDU beds only on St Thomas site. New cancer centre on Guys site will open Autumn 2016, all patient activity will be centralised.

Further analysis of key services provided on the 9 standalone sites identified was undertaken. The findings from this are presented in Table 7 below, where red denotes that services are not available on-site.

Table 7: Key Services Provided on Standalone Sites

CENTRE	FACILITIES/SERVICES ON SITE									
	HDU	ITU	Mgmt of Acute Leukaemia	Mgmt of High Grade Lymphoma	Mgmt of Refractory/ Relapsed Lymphoma	Bone Marrow Transplants	Specialist TYA Facilities	Phase I Trials	Osteo-sarcoma & Ewings	Germ Cell Tumours
Beatson WoSCC, Glasgow	Red	Red	Green	Green	Green	Green	Green	Green	Green	Green
The Christie Hospital, Manchester	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
The Royal Marsden Hospital – Chelsea	Green	Green	Green	Green	Green	Green	Red	Red	Soft Tissue Only	Red
The Royal Marsden Hospital – Surrey	Green	Red	Green	Green	Green	Green	Green	Green	Soft Tissue Only	Green
Barts Cancer Centre, London	Green	Green	Green	Green	Green	Green	Red	Green	Red	Green
Mount Vernon Cancer Centre/ East and North Herts NHS Trust	Red	Red	Red	Green	Green	Red	Red	Red	Red	Only Low Risk
South West Wales (Singleton) Cancer Centre, Swansea	Green	Green	Green	Green	Green	Green	Red	Red	Red	Green
Velindre Cancer Centre, Cardiff	Red	Red	Red	Green	Green	Red	Red	Red	Certain Types Only	Green
Clatterbridge Cancer Centre, Wirral	Red	Red	Green	Green	Green	Red	Green	Red	Green	Green

From Table 7 it can be seen that of the 9 standalone Cancer Centres, four do not have access to either on-site HDU or ITU facilities, these are the BWoSCC, Mount Vernon Cancer Centre, Velindre Cancer Centre and Clatterbridge Cancer Centre. Of these four Centres, which are not directly comparable in terms of size or the level of activity undertaken, only the BWoSCC provides the full range of other key services associated with a comprehensive Cancer Centre. This includes the management of: acute leukaemia; high grade lymphoma; refractory/relapsed lymphoma; BMT; phase 1 clinical trials; osteosarcoma and Ewings; germ cell tumours; and the provision of teenager and young adult facilities. In addition, the business case to co-locate the Clatterbridge Cancer Centre with Haemato-Oncology on an acute site has been approved and will be delivered over the coming years.

4.3 Service Standards

There are a number of service standards that have emerged and evolved over the last ten years that outline requirements for Haemato-Oncology and Solid Tumour Oncology. Services at BWoSCC do not meet these standards currently and nor did they prior to the 2015 acute services re-configuration.

4.3.1 Haemato-Oncology

Within Haemato-Oncology there are several UK and international standards of particular relevance, including:

- Haematological Cancers: Improving Outcome Guidance, NICE, May 2016.

This recently published guidance clearly states the need for those patients who are receiving high-intensity (non transplant) Systemic Anti Cancer Therapy (SACT) for induction or re-induction of remission or consolidation or who are receiving low or intermediate intensity SACT but have co-morbidities or frailty, or who are at risk of organ toxicities to be managed in a facility that has provision for direct admission to a specialist haematology unit or other facilities that can: rapidly assess and manage potentially life-threatening complications of SACT (e.g. neutropenic sepsis or bleeding); ensure that there is rapid

availability of blood components for transfusion; access on-site emergency cross-sectional imaging; can support the insertion of central venous catheters for SACT administration; and ensure that there is on-site access to bronchoscopy, intensive care and support for adults and young people with renal failure. Units should also have access to a consultant clinical oncologist for consultation, although radiotherapy facilities do not need to be on site.

- Facilities for the Treatment of Adults with Haematological Malignancies – ‘Levels of Care’, BCSH Haemato-Oncology Task Force, 2009

This document outlines standards required by level of care within Haemato-Oncology, services at BWoSCC are categorised as Level 2b/3:

Table 8: BCSH Standards

BCSH – FACILITIES FOR THE TREATMENT OF HAEMATOLOGICAL MALIGNANCIES		
Nomenclature	Level 2b	Level 3
Complexity of management	High	Complex regimens includes curative intent ALL
Radiotherapy	Designated consultant clinical oncologists input; access to radiotherapy facilities	Designated consultant clinical oncologists input; access to radiotherapy facilities
High Dependency Unit	On-site	On-site
Intensive Therapy Unit	On-site	On-site
Dialysis/haemofiltration	On-site	On-site
Microbiology	Access	Designated consultant microbiology input
Radiology	On-site 24 hours	On-site 24 hours
Computerised Tomography/Magnetic Resonance Imaging	On-site	On-site
PET	Access	Access
Interventional radiology	On-site	On-site
Bronchoscopy/respiratory	On-site	On-site
Access to leucopheresis	Access	On-site
Histopathology	Meeting IOG and MDT standards	Meeting IOG and MDT standards
Patient-centred care: fertility, psychological, specialist and general palliative care, social support, complementary therapy, spiritual, carer support and bereavement	Meeting IOG (Chap 2) standards	Meeting IOG (Chap 2) standards

- FACT-JACIE International Standards, Sixth Edition, March 2015

Within FACT-JACIE (2016) international accreditation of BMT services there is a need to ensure on-site access to renal support under the direction of nephrologists and trained personnel and for there to be an intensive care unit available. To meet these requirements NHSGGC have already taken the strategic decision to relocate BMT services on to the QEUH site.

4.3.2 Solid Tumour Oncology

CEL 30 (2012) provides the national standard for delivery of systemic anti-cancer therapy (SACT) which encompasses biological therapies and cytotoxic chemotherapy. There are a range of standards covering the administration of SACT which includes:

- Staff who administer SACT are aware of immediate potential side effects, administration related risks and their management.

The CEL allows for the administration of SACT outwith Cancer Centres/Units within a shared care framework that has been signed off and agreed by the NHS Board's Clinical Governance Groups. SACT with high risk of immediate adverse effects requiring specialist care must be excluded from the framework.

The current transfer model of care for patients on cancer treatment makes compliance with CEL 30 challenging. Given the majority of SACT is delivered as an outpatient/daycase it is usually the more complex regimes that are delivered on an inpatient basis and therefore, less suitable for shared care arrangements. It is not always appropriate for this to be supported by staff with generic SACT experience and knowledge and requires specialist input. To mitigate against this, a new SOP for the delivery of inpatient chemotherapy outwith BWoSCC has been developed to ensure compliance with CEL (30) requirements. This requires the transfer of chemotherapy trained nurses from BWoSCC to support the delivery of SACT treatments on the QEUH site.

5. BWoSCC Review Process

The BWoSCC Future Steering Group was established to address the first two HIS recommendations with a specific remit to agree a sustainable future Vision for the BWoSCC, examining short, medium and long terms strategies.

The BWoSCC Future Steering Group agreed key work streams and established five Sub Groups to take these forward:

- Acute Oncology Admissions Pathway / Process;
- Deteriorating Patient;
- Semi Urgent/Elective Specialty Support to BWoSCC;
- Oncology Support to the Acute Sites; and
- Role of Trainees/Training.

The Steering Group established a Clinical Reference Group to provide clinical opinion and advice regarding emerging models of care as well as engaging six Clinical Experts from across a range of relevant specialties in the UK (Intensive Care, Haemato-Oncology, Medical and Clinical Oncology and Acute Medicine).

The output from each of the sub groups was presented and discussed at an extended meeting of the BWoSCC Future Steering Group and the Clinical Reference Group on the 14th June 2016.

5.1 Case for Change

The BWoSCC Future Steering Group including the Clinical Reference Group and Steering Group Sub Groups considered a range of factors when evaluating options to develop sustainable service models.

5.1.1 Minimising Patient Transfers

Under the previous model, patients required to be transferred to the Western Infirmary for Level 3 care. Under the current arrangements the number of patients requiring off site transfer to the QEUH is substantially greater. Whilst the current service model in place which relies on the transfer of patients requiring acute or critical care from BWoSCC to QEUH is safe with regard to the management of the acutely deteriorating patient, it is sub-optimal for the delivery of care to cancer patients.

Care is fragmented across clinical teams potentially leading to poorer communication and experience for the patient. It is difficult to provide any Oncology support to these patients once transferred to QEUH and in most instances, the level of support required can only readily be delivered by the specific specialist tumour team looking after the patient.

Of concern is the disruptive impact on curative cancer treatments for patients being transferred to QEUH for acute care, with both Radiotherapy or Chemotherapy treatment disrupted and therefore, delayed.

5.1.2 Compliance with National Standards

As evidenced above, the BWoSCC does not currently meet service standards relating to Haemato-Oncology services that requires on-site access to general acute hospital services and other clinical services, such as, respiratory medicine, nephrology, and cardiology.

These standards have evolved over the last ten years and BWoSCC has never complied with a number of them. There is now an opportunity to address this in planning for the future configuration of services.

As described, the current transfer model of care for patients on cancer treatment makes full compliance with CEL 30 challenging. Given the majority of SACT is delivered as an outpatient/daycase it is usually the more complex regimes that are delivered on an inpatient basis and therefore, not suitable for shared care arrangements as described in CEL 30. It is not always appropriate for this to be supported by staff with generic SACT experience and knowledge and requires specialist input.

5.1.3 Service Co-Dependencies

Oncology services have become increasingly isolated from medical and surgical practice. This has happened at a time when the complexity of cancer treatments is increasing, patients are older and sicker and the treatments have more side effects. In most Cancer Centres, the majority of the beds are used for patients that are seriously ill because of their underlying cancer or because of the side effects of treatment. The management of these conditions require ready access to critical care facilities and the full range of general medical and surgical expertise.

The key co-dependencies identified are:

- Critical Care;
- Respiratory Medicine;
- Surgery;
- Cardiology.

This requirement was reinforced by the External Advisors at the 14th June event who described the approach of major stand alone centres in NHS England as one of in-reach and on-site support as opposed to a patient transfer model.

5.1.4 Regional Service

As outlined in section 3, 50% of all oncology and 36% of all Clinical Haematology inpatient episodes in 2015/16 were from outwith NHS Greater Glasgow and Clyde, thus reinforcing the regional nature of services provided from BWoSCC.

Furthermore, a significant proportion of activity at BWoSCC comes from patients transferring from Acute Hospitals to the Cancer Centre for treatment including palliative radiotherapy and symptom management, approximately 570 episodes in 2015/16. It needs to be recognised that these patients are being transferred from a Hospital site that is co-located with acute services including access to critical care to the Cancer Centre that is currently located on a cold site on the Gartnavel campus.

5.1.5 Clinical Trials Portfolio

The increasing geographical isolation of the current GGH site has the potential to become a barrier to the realisation of the BWoSCC's contribution to cancer research. Many clinical trials require ready access to critical care which is not immediately available on the GGH site. As demonstrated through the UK benchmarking exercise, the BWoSCC is the only UK Cancer Centre currently engaged in phase one trials that does not have access to critical care on site.

The BWoSCC is among the most active trial recruiters and income generators in the UK, and within the top few in Europe. The BWoSCC generates c. £1.8 million p.a. with the largest proportion on commercial clinical trial/research income in NHSGGC from any therapeutic area. The BWoSCC is a member of the Quintiles' Early Phase Oncology Network (one of only 15 centres in Europe, and 3 in the UK, invited to take part).

Clinical cancer research activities based around the BWoSCC and associated research facilities currently attracts a high level of national funding from CSO and Cancer Research UK (CRUK), among others. Major infrastructural funding awards include the Glasgow Experimental Cancer Medicine Centre (ECMC) programme grant (CSO/CRUK; seeking renewal in 2016), CRUK Glasgow Clinical Trials Unit (CRUK; seeking renewal in 2017) and the CRUK Glasgow Cancer Centre (CRUK; seeking renewal in 2016). A joint major centre bid is being submitted with NHS Lothian and the Universities of Glasgow and Edinburgh, which if successful, will see the BWoSCC as being part of only 4 such awards in the UK. In addition, the academic research facilities based in and around BWoSCC host multiple project grants to support individual trials and continues to seek new funding for the work of the future (for example, the PRECISION panc initiative, a

global research programme to move forward the treatment of pancreatic cancer led by Glasgow as well as work to progress cancer imaging research).

There are enormous benefits from this level and type of activity for both patients treated within the Centre and also for the organisation as a whole in terms of optimising outcomes: Centre reputation; the ability to attract and retain high calibre research staff; and maximising resource.

5.1.6. National and International Reputation

The UK benchmarking exercise has highlighted the unique situation the BWoSCC finds itself in when compared with the rest of the Centres across the UK. This has been further emphasised by the external advisors with a very strong message delivered on the potential impact to the Centre's profile and reputation. In a highly competitive labour market with UK wide ST recruitment in both Clinical and Medical Oncology this has the potential to impact on recruitment and retention and therefore, the underlying viability of BWoSCC as a major cancer centre.

5.1.7. Future Developments

There is increasing use of treatment regimes that involve multiple specialties working together e.g. oncology, surgery and interventional radiology suggesting that isolated cancer centres are no longer appropriate. The case for wider support includes SACT agents that are now mainstream e.g. Hypertension from Tyrosine Kinase Inhibitors. This, together with the increasing toxicity of new treatments requiring the support of acute services, drives forward the recommendation for co-location of services.

5.2 BWoSCC Future Steering Group Sub Groups

The key outputs from each of the sub groups are summarised below.

5.2.1 Acute Oncology Admissions Pathway / Process

From the outset this group identified a number of issues specific to the BWoSCC. These included the level of medical staffing, 50+ consultants with team based registrars, both of whom are often off site for much of the week; communication challenges, particularly for complex cases; tertiary referral centre with patients coming from across Scotland; and the increased number of admissions to the BWoSCC since the opening of the AOAU.

A number of improvements have already been implemented including clearly documented and formalised admission pathways; there is now a Specialist Registrar on call for the week with a freeing up of consultant time and greater ward doctor involvement; two formal handovers per day have been established; and electronic solutions are being pursued to improve communication. Work continues to refine and embed new ways of working and it is envisaged that this group will stand down in December 2016, having achieved its objectives.

5.2.2 Deteriorating Patient

The remit of this group was to review options to deliver a sustainable model for patients requiring escalated care beyond that currently available at BWoSCC to include a sustainable alternative to the current resident Anaesthetist arrangements.

The deteriorating patient sub group considered a number of issues, building on work that had already been undertaken within the BWoSCC to establish the AOAU, HAU and CCO services previously outlined in this paper. Taking cognisance of these developments the group focussed its attention on the high dependency and critical care requirements and the skills required to support deteriorating patients; identifying service co-dependencies; as well as assessing the implications of split site working on “hot/cold” sites.

5.2.2.1 Options Considered

The group considered options to replace the skill set currently provided by the Anaesthetic arrangements, and in doing so surveyed clinical opinion within BWoSCC as well as reviewing the reasons for anaesthetic contacts from the current team.

From this, the following list of optimal skills required was developed:

- Managing Cardiac Arrest;
- Arterial Lines;
- Central Venous Access/Monitoring;
- Intubation/Advanced Airway Management;
- Management of Shock;
- Inotrope Administration and Monitoring;
- Stabilisation prior to Transfer; and
- Advice on Cardiac Emergencies.

Different options were then explored to meet these requirements including the rotation of trainees; recruitment of clinical fellows; development of Advanced Nurse Practitioners; and risk stratification of the inpatient service.

Trainees

There would be a minimum number of 6 trainees required to sustain a separate rota (anaesthetic/critical care) for BWoSCC to ensure cover could be provided out of hours. Given the number of gaps there are currently across NHSGGC, it was quickly agreed that establishing a further rota would only destabilise the existing critical care units. Further, it was deemed unlikely that these posts would be recognised for training and therefore, this option was not pursued further.

Clinical Fellows/ Specialty Doctors

The group explored the potential to recruit a sufficient number of clinical fellows/Specialty Doctors (non training posts) to provide 24/7 rota cover for the BWoSCC, exploring the model in place at Royal Marsden Hospital (Surrey Site) whereby a satellite of the main Critical Care Unit on the Chelsea site is staffed 24/7 by 6 clinical fellows.

However, similar to the issues identified above, there are already significant gaps in critical care rotas across NHSGGC. Vigorous attempts are being made to recruit these posts to cover gaps in existing rotas

with varying success. It was therefore, considered highly unlikely that NHS GGC would be able to recruit sufficient numbers of non training grade posts of the required experience to create a new rota to cover BWoSCC.

Advanced Critical Care Practitioners

Following a meeting involving three of the external advisors to the process as well as the local team, an option to develop a team of Advanced Nurse Practitioners was explored. It was proposed that a service could be provided by a team of suitably trained and skilled nurse practitioners to provide 24/7 cover to assess and stabilise deteriorating patients. The proposal was for this team of nurses to be supported by enhanced in-reach involving scheduled review by critical care, medical and surgical colleagues. However, recognising that this role could take up to three years to develop, it was not considered as a short term solution to the current arrangements. Nor was it considered an option to address some of the key issues highlighted in the case for change. In particular, this option would still require the transfer of patients off site for anything beyond level one care and therefore, does not address concerns regarding continuity of cancer care.

Risk Stratification of the Inpatient Service

The group further reviewed options to risk stratify the inpatient service by including the transfer of higher risk inpatient activity to an acute site. Initially the group considered whether this risk stratification could be restricted to the highest risk areas employing high intensity and often radical therapy delivered with curative intent, for example:

- Germ Cell cancer;
- Sarcoma; and
- Acute Leukaemia.

However, analysis of HAU/CCO admissions over the year has demonstrated significant patient activity from outwith these areas. Therefore, it was suggested that even with transferring this activity to an acute site, there would still be a required level of infrastructure on site to support the remaining inpatient service.

Further work was then undertaken to increase the potential level of inpatients transferring to an acute site to include all emergency admissions; inpatient elective chemotherapy; and inpatient admissions for symptom management/investigation.

Based on the four week analysis, a split of 76 % 'hot' site and 24% 'cold' site working could be applied to the BWoSCC's 104 oncology beds. Given the logistical challenges in providing a split site inpatient service, the group concluded that the further fragmentation of oncology or haemato-oncology care should be avoided.

5.2.2.2 Conclusions

The Group concluded that there was no viable option in the short term to replace the current Anaesthetic arrangements at this time but that there should be ongoing work to explore a more sustainable and appropriate solution. The group further concluded, that oncological care needs to be integrated with acute services and should not operate in isolation. It was agreed that there are significant benefits in terms of

patient outcomes to on-site co-location with services that are provided on an acute site including surgery, medicine and critical care.

The group therefore, proposed that in the medium to long term, co-location of Specialist Oncology Services with Acute and Critical Care services was the only sustainable strategic solution to current arrangements.

5.2.3 Semi Urgent/Elective Specialty Support to BWoSCC

This group has focussed on more clearly defining and formalising arrangements for the provision of semi urgent and elective care to the BWoSCC as it is currently configured. As a result there is now greater clarity around semi urgent/elective pathways with clear escalation routes to senior medical and surgical colleagues.

At the event held on 14th June, an overview of the service model at the Christie Hospital in Manchester was provided by one of the External Advisors. The model developed to support the Christie was described as in-reach rather than the transfer of patients off site. Access to services available on site include Cardiology, Diabetes and Endocrinology and Infectious Diseases as well as having Consultant Acute Physicians on site Monday to Friday 8am to 5pm. As the Christie provides surgical oncology services, surgical support is again readily available on site.

This group has now been tasked with evaluating opportunities to provide in-reach medical and surgical support to the service at the BWoSCC.

5.2.4 Oncology Support to the Acute Sites

In recent years, the discipline of Acute Oncology has developed across the UK and is now recognised as an important component of a comprehensive Oncology service. This service has not previously been provided within NHS GGC.

The work of this group centred on defining what would be required to manage acutely unwell patients with oncological and haemato-oncology conditions coming into the QEUH. To inform this work a detailed audit of all admissions to QEUH with a cancer diagnosis and suspected cancer during February 2016 was undertaken. Of 9308 attendances to the QEUH, there were 749 attendances by 701 patients diagnosed with or suspected as having a cancer. Of this 575 had a cancer diagnosis; 37% (210) patients were within 6 weeks of treatment; 69% had been seen in past by oncology/haematology while 25% by had been seen by surgeons only; and 10% previously known to palliative care. Of the patients attending within six weeks of treatment, the main reasons for attendance were respiratory symptoms (14%), abdominal pain (11%), and suspected neutropenic sepsis (11%). 75% of these patients were admitted while 25% were discharged home. The main reasons for admission were neutropenic sepsis (17%), progression of cancer (16%), and urological problems (10%). The mean length of stay for those patients admitted was 10 days with a range of 1-86 days.

Based on the above, the group are currently developing an agreed service specification for an acute oncology service within the QEUH, the focus of which will be on managing patients within 6 weeks of cancer treatment; are oncology emergencies; or have carcinoma of unknown primary. Once established, and if positively evaluated, a regional model of care for acute oncology will be considered for roll out to

other acute sites across the region as part of a regionally agreed strategy. This would be a significant development to improve a long recognised service gap.

In addition, there is an identified need to improve oncology support to patients transferring to QEUH for acute/critical care. It is anticipated that the proposed Acute Oncology service could support improved communication/co-ordination with site specific teams as well as supporting the management of oncological emergencies on that site.

5.2.5 Role of Trainees/Training

This group was tasked with looking specifically at the role trainees could potentially fulfil in the management of deteriorating patients. To inform this, a survey of trainees was undertaken. Key findings from this survey include: clinical oncology and medical oncology trainees are trained 'medically' to MRCP level; the majority of trainees have no acute medical experience beyond ST2 level; trainees are involved with acutely unwell patients on daily basis but require input from HAU nurses/critical care staff where initial treatments have not helped or there is further deterioration; almost all of the trainees suggested unease with regard to performing practical procedures; core medical competencies for acute medical and critical care trainees were far more extensive than clinical or medical oncology who had their own specific curriculum.

The group overwhelmingly concluded that trainees within an acute oncology setting will continue to need the expertise of HAU nurses and an anaesthetist on-site out of hours 24/7 and that in the medium to longer term, co-location with acute services including critical care would be of benefit to all.

5.3 Expert Opinion

Six external advisors were engaged to support this process and comment on service models that were being considered and included:

- Professor Graham Jackson, Clinical Haematology, Newcastle
- Dr Carl Waldmann, Consultant Intensivist
- Dr Adrian Crellin, Consultant Clinical Oncologist, Leeds
- Dr Tim Cooksley, Consultant Acute Physician, Christie NHS Trust
- Dr Ernie Marshall, Consultant Medical Oncologist, Clatterbridge NHS England Lead for Acute Oncology,
- Dr Tim Wigmore, Consultant Intensivist, Royal Marsden NHS Trust

All six external advisors were asked to provide their opinion on the progress being made by the BWoSCC Steering Group and recommendations for the future planning for the BWoSCC in the medium to long term.

Dr Cooksley, Professor Jackson, Dr Waldmann, Dr Marshall and Dr Crellin have all recommended that the BWoSCC co-locate with acute services.

Feedback includes:

- 'As a national centre of excellence and a supra specialist site for complex cancer care, the Beatson needs to develop an integrated approach with medical and surgical services to enable it to flourish as a world leader in cancer care and research. The service needs to investigate options towards a greater

degree joint working in both the elective and urgent care setting. Serious consideration should be given to the re location of inpatient care onto the QEUH site.'

5.4 Improvement Event

A half day event was held mid June 2016 and was attended by members of the Steering Group, Clinical Reference Group and Sub Groups. The External Advisors were invited and both Dr Cooksley and Professor Jackson were able to attend. The event heard from both Dr Cooksley and Professor Jackson with regard to their services in comparison to the BWoSCC and what they perceived as both the challenges facing the BWoSCC and potential solution to the current situation. Each Sub-Group presented on their work to date and in particular emerging solutions in the medium to longer term as summarised above.

The key issues captured and considered at this group were:

- The need to co-locate cancer services with acute services;
- The need to improve oncology support to acute sites and in the short term; and
- The need to improve medical and surgical in-reach support to BWoSCC.

These three objectives were fully endorsed by those present, including the two External Advisors.

6. BWoSCC Future Steering Group Conclusions

Arrangements that have been put in place have improved and transfer arrangements have been demonstrated to be safe with regard to the management of the acutely deteriorating patient, but remain sub-optimal for the delivery of oncology services.

The key issues are:

- The current model is neither optimal nor sustainable in the longer term;
- The current transfer model adversely impacts on curative treatment regimes delivered at the Cancer Centre;
- There is a lack of Oncology expertise available at QEUH to support cancer patients on an unfamiliar site and whilst the Acute Oncology development will help with liaison, it cannot replicate or replace the tumour specific input that is required;
- The current arrangements do not meet recognised service standards;
- The BWoSCC is the only Cancer Centre in UK in this position without an agreed strategy to address this situation; and
- Patients are currently being transferred from Hospitals with access to acute services/critical care onto a site with little or no infrastructure outwith oncology services available.

The Steering Group considered high level options to deliver co-location which could include:

- Redevelopment of the GGH site to include on site access to acute surgical and medical services and critical care;
- Development of a comprehensive Cancer Centre to include surgical oncology on GGH site supported by a range of medical services;

- Relocation of the Cancer Centre to an Acute Hospital site either in entirety or inpatients only.

A full option appraisal would be required to determine the best strategic fit.

7. Recommendations

Therefore, the BWoSCC Future Steering Group recommends the following:

7.1 Recommendation 1:

Co-location of non surgical oncology services with acute services including Critical Care, medical and surgical specialties should be pursued at the earliest opportunity.

This is in line with developments elsewhere in the UK and takes account of continuing developments in cancer care, including: increasing complexity and toxicity of systemic anti cancer agents; an expansion in clinical research; increasing concomitant treatment delivery; and the need to maximise the opportunities presented by new treatment techniques and technologies, all of which necessitate ready access to medical and surgical specialties as well as critical care. Further work should be carried out to develop a full option appraisal.

7.2 Recommendation 2:

It is recognised that the longer term strategy outlined in recommendation 1 requires to be underpinned in the interim with the more robust and sustainable clinical management procedures and processes that the sub groups have developed, building on work that was already underway. These developments should be fully supported.

In addition the following should be maintained and enhanced:

- Continued access on site access to the skill set identified in section 5.2.2.1. with options to provide a more sustainable service continuing to be explored;
- Improved access to regular on-site medical and surgical support;
- Implement acute oncology service at the QEUH that, if positively evaluated, is extended to other acute sites within NHSGGC and across the region as part of a wider, regionally agreed, strategy.

The recommendations made, when implemented, will ensure that the BWoSCC can deliver services in the optimal way to improve outcomes for patients. It is believed that failure to do so would undermine the research programme of the BWoSCC where there is an expanding portfolio of Phase 1 and 2 and first in man trials; and the key benefit of a comprehensive Cancer Centre, in which haemato-oncologists, oncologists, surgeons, physicians and intensivists interact to provide truly multidisciplinary care. Loss of any one of these disciplines will result in disruption and dislocation of care, which is likely to be, at least, distressing to patients and their relatives at what is a very difficult time and may, at worst, threaten outcomes.

Appendix 1**BWoSCC Future Steering Group Members:-**

Dr David Stewart, Lead Director for Acute Medical Services (Chair)
 Dr John Crawford, Consultant Anaesthetist, Surgery & Anaesthetics
 Dr David Dodds, Clinical Director, Specialist Oncology Services, **Chair of Deteriorating Patient Sub Group**
 Dr Cathy Hutchison, Cancer Nurse Consultant, Specialist Oncology Services
 Dr Graeme Lumsden, Consultant Clinical Oncologist, Specialist Oncology Services, **Chair of Training Sub Group**
 Ms Melanie McColgan, General Manager, Specialist Oncology Services and Clinical Haematology
 Dr Pam McKay, Consultant Haematologist, Clinical Haematology
 Dr Alison Mitchell, Consultant in Palliative Medicine, Specialist Oncology Services, **Chair of Acute Pathways Sub Group**
 Dr Anne Morrison, Clinical Director, Clinical Haematology
 Ms Evelyn Thomson, Regional Manager (Cancer), West of Scotland Cancer Network (WoSCAN)
 Mr George Welch, Chief of Medicine, Surgery & Anaesthetics, **Chair of Semi Urgent/Elective Pathways Sub Group**
 Dr Miranda Ashton, Specialist Registrar, Specialist Oncology Services
 Mr John Barber, Patient Experience and Public Involvement Manager
 Dr Scott Davidson, Clinical Director, Emergency Care & Medical Services
 Dr Hilary Dobson, Regional Lead Cancer Clinician, West of Scotland Cancer Network (WoSCAN)
 Professor Jeff Evans, Professor of Translational Cancer Research, Specialist Oncology Services
 Professor Rob Jones, Honorary Consultant, Specialist Oncology Services
 Mr Barry Sillers, Head of Planning, North and Regional Services
 Dr Ashita Waterston, Consultant Medical Oncologist
 Dr Jeff White, Consultant Medical Oncologist, Specialist Oncology Services, **Chair of Acute Oncology Sub Group**
 Dr Sandy Binning, Clinical Director, Intensive Care

Clinical Reference Group Members:-

Dr Hilary Dobson, Regional Lead Cancer Clinician, West of Scotland Cancer Network (WoSCAN) (Chair)
 Dr Sophie Barrett, Consultant Medical Oncologist, Breast Team Lead
 Mr Garry Currie, Head of Radiotherapy Physics
 Dr David Dodds, Clinical Director, Specialist Oncology Services
 Dr Jane Edgecombe, Consultant in Palliative Medicine, Palliative Medicine Team Lead
 Mrs Maureen Grant, Lead Nurse, Specialist Oncology Services
 Dr Derek Grose, Consultant Clinical Oncologist, Head and Neck Team Lead
 Dr Rosie Harrand, Consultant Clinical Oncologist, Gynaecology Team Lead
 Dr Aisling Hennessy, Consultant Clinical Oncologist, GI Team Lead
 Dr Jonathan Hicks, Consultant Oncologist, Lung Team Lead
 Prof Rob Jones, Consultant Medical Oncologist, Urology Team Lead
 Dr Mike Leach, Consultant Haemato-oncologist
 Miss Melanie McColgan, General Manager, Specialist Oncology Services and Clinical Haematology
 Dr Noelle O'Rourke, Consultant Clinical Oncologist, Chair of Consultants Committee
 Dr Pam McKay, Consultant Haematologist
 Mrs Helen Stewart, Acting Head of Therapy Radiography
 Ms Evelyn Thomson, Regional Manager (Cancer) (WoSCAN)
 Dr Jan Wallace, Consultant Clinical Oncologist