South Australian Hepatocellular Cancer Care Pathway
Optimising Outcomes for South Australians diagnosed with Hepatocellular Cancer

Developed by the Hepatocellular Cancer Working Party of the South Australian Cancer Clinical Network
The pathway development project was undertaken by the Hepatocellular Cancer Working Party under the auspices of the South Australian Cancer Clinical Network.

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Assistance with editing and formatting of the final document was provided by Irene Schluter
EXECUTIVE SUMMARY

The South Australian (SA) Hepatocellular Cancer Care Pathway was created under the auspices of the SA Cancer Clinical Network. It provides recommendations based on current evidence for best practice in the management of patients diagnosed with HCC.

The SA HCC Care Pathway has been developed through a collaborative effort involving a wide range of health professionals, HCC specialist practitioners, generalist staff and consumers. It is a statement of consensus based on current best practice, evidence and accepted approaches to HCC treatment and management. Recommendations should be followed subject to the health professional’s independent medical judgment and the patient’s preference in each individual case.

The Pathway adopts a multidisciplinary approach to the care of people affected by HCC with involvement of all relevant health professionals.

The pathway sets out key requirements for the provision of optimal care which needs to be considered in the HCC patient journey. However, it should be noted that not all patients will progress through each step of the pathway. This is a consequence of many factors, including disease outcomes, management decisions, and patient decisions.
Key recommendations

This document contains recommendations relating to the diagnosis, treatment and supportive care of people with HCC in South Australia. Key recommendations are highlighted below.

<table>
<thead>
<tr>
<th>Pathway Recommendation</th>
<th>Service/System Recommendation</th>
</tr>
</thead>
</table>
| 1 Establishment of statewide MDT meetings for Hepatocellular Carcinoma | • Two MDT meetings to be established (RAH, FMC)  
• Meetings to both run fortnightly  
• Meetings to run as per statewide guidelines for MDT meetings  
• Standardized referral forms |
| 2 All patients diagnosed with HCC to be discussed prospectively at HCC MDT meetings within 2 weeks of diagnosis | • Participation in the multidisciplinary team becomes an accepted component of core business for HCC clinicians.  
• Participation in the multidisciplinary team and/or preparation of diagnostic materials and/or results is included as core business of diagnostic service providers within South Australia.  
• The role of multidisciplinary team administrative assistant is introduced to provide support for preparation, monitoring and follow-up functions required by the multidisciplinary team.  
• Appropriate information and communications technology (ICT) is implemented to enable multidisciplinary team participation across multiple sites (including the Northern Territory) with high resolution support for radiology |
| 3 All patients with HCC's are referred via MDT meetings to specialists and institutions with adequate experience, workforce and infrastructure to safely and effectively manage them | • All patients with HCC receive treatment where there are appropriately trained clinical specialists available including; hepatologists, surgeons, interventional radiologists, medical and radiation oncologists and dieticians |
| 4 Standardization of diagnosis and management of HCC | • Adoption of Barcelona Clinic Liver Cancer (BCLC) Group algorithms for the diagnosis and management of HCC |
|   | All patients with HCC to have access to specialist nursing care and cancer care coordination throughout the cancer pathway | • Introduce two fulltime HCC Clinical Practice Consultant (CPC) to provide and coordinate supportive care from screening, diagnosis throughout treatment to follow-up, survivorship or referral for end of life care.  
• One CPC based within CNAHS (RAH) and one based at SAHS (FMC) with clearly designated geographical referral pathways |
|---|---|---|
| 6 | Establishment of a statewide screening program for HCC | • This is urgently required due to rapidly rising incidence of HCC in South Australia (and Northern Territory) and the availability of a cost-effective screening method (6-monthly ultrasound) and curative therapies that have demonstrated reduced mortality of screened populations in randomized controlled trials  
• To be developed by HCC Clinical Practice Coordinators  
• To be fully integrated between hospital and primary care  
• To be transitioned to primary care sector in medium-long term |
| 7 | Ensure quality and safety of HCC care is monitored at a state level | • Continuous audit of incident cases referred to MDT’s  
• Initiate a process for centralised review and reporting of key performance indicators (KPIs) and benchmarks for clinical and service outcomes. |
| 8 | HCC database development | • Provide a statewide systematic centralised database that captures minimum agreed data of all persons with a diagnosis of HCC to allow all treatment outcomes to be reported, reviewed and measured.  
• Provide linkage of HCC MDT data to existing to centralized database to improve the accuracy of HCC incidence reporting |
1 INTRODUCTION

1.1 Pathway development

The Hepatocellular Cancer Pathway was developed by a multidisciplinary working party, under the auspices of the SA Cancer Clinical Network.

A comprehensive cancer pathway model was developed with the aim of improving and standardising cancer care for all South Australians regardless of their location, origin, age or financial status. The pathway is based on available evidence and clinical expertise, with a strong emphasis on clinical and supportive care within the local SA context.

The Optimising Cancer Care subcommittee prioritised the development of three pathways as proof of concepts for the South Australian setting. The three pathways are:

- Upper Gastrointestinal Cancer
- Lymphoma
- Adolescents and Young adults with Cancer

Each pathway developed for SA has utilised the common cancer pathway model (Figure 1) as a basis for individual pathway development to ensure consistency with the concept.

Figure 1 Cancer Pathway

- The pillars represent the key requirements that provide support for cancer services.
- The central cancer pathway illustrates the clinical aspects of the cancer journey.
- Integral to clinical care is supportive care, which is represented by the hands.
- The circles or “pods” surrounding the pathway highlight the key issues that require due consideration in planning all cancer clinical and supportive care.

Developed by DM Keefe and K Linke on behalf of the SA Cancer Clinical Network Steering Committee
1.2 Aims

> To provide guidance and consistency of practice in patient management and to reduce the variation in current practice observed throughout South Australia
> To encourage early, appropriate referral and early diagnosis in the general population and in high risk groups.
> Information provision and decision making tailored to patient’s needs
> Provision of psychosocial care including assessing and responding to emotional, psychological, spiritual, social and familial requirements
> To ensure that all patients with cancer are offered the best chance of cure or palliation irrespective of where they present or are treated.
> To optimise coordinated care delivery for cancer patients at all stages of their disease.
> Particular attention needs to be paid to the specific needs patients from regional and remote South Australia, and patients from culturally and linguistically diverse backgrounds.

1.3 Structure

People affected by cancer have diverse and complex clinical and supportive care needs. Figure 2 illustrates and identifies the steps and optimal care requirements for the person with cancer. The pathway promotes care coordination and a consistent, standardised approach to managing care. It is acknowledged that many people affected by cancer may not follow every step of the pathway, due to variations in clinical presentation that will influence individual decisions about care.
Figure 2 Key Stages in the Hepatocellular Cancer Care Pathway

Prevention; Minimising cancer risk; Screening and early detection
- Minimizing/avoiding risk factors for HCC
- Hepatitis B vaccination
- Recognising at risk populations for HCC
- 6-monthly ultrasound screening of at risk populations

Initial diagnosis
Role of GPs/emergency health services in:
- initial assessment
- relevant investigations
- diagnosis
- timely referral to HCC specialist

Referral
Referral to HCC specialist and/or staging investigations

Determination of treatment – the multidisciplinary team (MDT)
- Presentation at a Hepatocellular Multidisciplinary Team meeting (within 2 weeks of diagnosis)
- Treatment recommendations

Treatment
- Ablation
- Surgery
- Chemoembolization
- Palliative care
- Supportive care

Follow-up
Post-treatment follow-up and management

Survivorship needs

End-of-life care

Survivorship
- Monitoring and management of long-term sequelae of treatment or disease sequelae

Disease recurrence
- Reassessment of disease status
- Presentation at MDT to determine management plan
1.4 Key Principles

**Patient centred care**
Patients and their families/caregivers are encouraged to be involved as active participants in care planning and decision making. Ultimately treatment decisions rest with the patient or designated person. This requires information and discussion to be provided in their preferred language and in a manner that is sensitive to their culture².

**Safe and high quality care**
Cancer care is complex, involving a range of specialist providers and clinicians with varied clinical expertise. To ensure safe and high quality cancer care it is essential for clinicians to possess the technical skills and experience to undertake the relevant aspects of cancer care and have access to appropriate infrastructure to support such care³.

**Multidisciplinary care**
Best practice in cancer care involves multidisciplinary treatment planning and multidisciplinary care⁴.
Effective multidisciplinary approaches in the management of patients with cancer have demonstrate positive outcomes⁵, including increased survival, and greater understanding that a comprehensive team is providing care, a greater likelihood of receiving care that is in accordance with clinical practice pathways (including psychosocial and practical support), increased access to information for patients and increased patient satisfaction with care.

**Supportive care**
Patients with cancer have psychosocial and social needs that are frequently undetected and unmet, and have the potential to cause long-term distress⁶.
Supportive care includes the acknowledgment of all domains of patient needs-physical, psychological, informational and spiritual-that may be required to support the patient and their families/caregivers⁷.

**Care co-ordination**
Patients require co-ordination of their health care. A variety of strategies have been shown to improve co-ordination of care and these include multidisciplinary team meetings, clinical protocols, access to cancer nurse specialists and utilisation of appropriate performance indicators⁸.
Review and updating
The South Australian HCC Pathway was released as final draft in 2012. It is expected that after refinement and review during 2012 it will be due for periodic review every two years. Interim updates of the HCC Pathway will be undertaken as recommended by the Optimising Cancer Care Committee.

1.5 Pathway target audience

The South Australian Hepatocellular Cancer Pathway is a guide to the optimal management and care of persons diagnosed with Hepatocellular cancers. The pathway provides a guide for the patient journey to ensure persons with Hepatocellular cancer and their families receive optimal and consistent care and support across South Australia.

It is anticipated that the pathway and the pathway recommendations will be of interest to all health care professionals involved in the care of Hepatocellular cancer in the public and private sector and:

- SA Health
- Aboriginal community-controlled health services
- The Cancer Clinical Network Steering Committee (CCNSC) and associated committees and working groups
- People involved in cancer care projects
- Consumers of cancer care
- Non-Government Organisations (NGO’s)
- General Practitioners (GPs)
- Dental Practitioners
1.6 SA Health Aboriginal Health Impact Statement and Checklist

An Aboriginal and Torres Strait Islander Companion Document to the Statewide Cancer Control Plan (2011 – 2015) and Cancer Care Pathway has been developed by The Aboriginal and Torres Strait Islander Committee of the SA Cancer Clinical Network. For full details please go to the following website: http://www.sahealth.sa.gov.au

1.7 Statement of intent

This pathway is not intended to be used as a standard of care. Standards of care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge and technology advances and patterns of care evolve.

Adherence to pathway recommendations will not ensure a successful outcome in every case, nor should they be considered as including all proper methods of care or excluding other acceptable methods of care aimed at the same results.

The ultimate judgement must be made by the appropriate health care professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan. This decision should be made only after discussion of the diagnosis and available treatment options with the patient. It is advised, however, that significant departures from the South Australian Hepatocellular Cancer Pathway should be documented in the patient’s case notes at the time the relevant decision is made.

1.8 Review and updating

The South Australian Hepatocellular Cancer Pathway was released as final draft in 20<insert year here>. It is expected that after refinement and review during 20<insert year here> it will be due for periodic review every two years to reflect policy changes, the release of new data, research studies and other relevant developments as recommended by the Optimising Cancer Care Committee.
2 HEPATOCELLULAR CANCER IN SA AND THE NT

2.1 Incidence and mortality rates and trends
The age-standardized incidence in Australia is lower than worldwide figures but appears to be rapidly increasing, along with many other developed countries. New cases of HCC between 2002 and 2011 are projected to increase by 65%, making this the fastest percentage increase of any cancer, other than mesothelioma. The epidemiology of HCC in South Australia has been recently reviewed by Luke et al and this work forms the basis of data below.

Table 1 and Figure 3 show the annual age-standardized incidence per 100,000 of HCC in South Australia. A number of observations deserve comment. Firstly there has been a 143% increase in incidence between the era of 1977-82 (1.33 cases per 100,000) to the era 2003-2007 (3.3 cases/100,000). Another important observation is the much higher incidence of HCC in males, with 77% of all HCC’s occurring in males.

Table 1 Annual Incidence of HCC per 100,000 population by calendar year and sex-age standardized
(adapted from Luke C et al, AJPJP, 2010)

<table>
<thead>
<tr>
<th></th>
<th>1977-82 (n=89)</th>
<th>1983-87 (n=75)</th>
<th>1998-92 (n=109)</th>
<th>1993-97 (n=141)</th>
<th>1998-02 (n=199)</th>
<th>2003-07 (n=288)</th>
<th>Total (77-07)</th>
</tr>
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<tbody>
<tr>
<td>Males (n=693)</td>
<td>2.24</td>
<td>1.71</td>
<td>2.69</td>
<td>3.02</td>
<td>4.29</td>
<td>5.42</td>
<td>3.20</td>
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<tr>
<td>Females (n=208)</td>
<td>0.61</td>
<td>0.71</td>
<td>0.67</td>
<td>0.85</td>
<td>0.83</td>
<td>1.28</td>
<td>0.82</td>
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<tr>
<td>Total (n=901)</td>
<td>1.33</td>
<td>1.16</td>
<td>1.57</td>
<td>1.85</td>
<td>2.39</td>
<td>3.23</td>
<td>1.9</td>
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Incidence data from the Northern Territory (NT) has been studied by Dr Josh Davis, with the following unpublished observations. The age standardised incidence rate (ASR) of HCC in the NT for the period of 1991-2009 was 7.3/100,000. This figure was above the national age standardised incidence rate for this period of 5.2/100,000 (data from AIHW). The age standardised incidence rate among NT indigenous Australians (IA) was 22.8/100,000. The age standardised incidence rates amongst indigenous Australians are particularly alarming when male incidence rates are compared with other male populations (Figure 3) and appear higher than all other groups studied.

Figure 3  Annual Incidence of HCC per 100,000 population by calendar year and sex-age standardized
(adapted from Luke C et al, APJCP, 2010)

Figure 4  Age standardized incidence rates for HCC in male populations
(Davis J et al)
(IA; indigenous Australian)
Current incidence data may represent a significant underestimate of the true incidence of HCC. This is because many patients with early HCC have tumour diagnosed non-invasively and receive curative therapy. Cancer registry notification for this growing group, without histology or death, may not be occurring. Improved reporting of incident HCC cases through the Statewide HCC pathway is an important goal of this effort.

Mortality data shows similar trends with mortality increasing 113% from the 1977-88 era (1.6 cases per 100,000 cases) to the most currently available data form 2003-2007 (3.4 cases/100,000). This data also includes mortality from cholangiocarcinomas and other invasive liver cancers, but these cancers only represent 26% of the total number.

### 2.2 Survival outcomes and trends

HCC is the third leading causes of cancer death worldwide. Most recent estimates suggest that HCC (including the small number of cholangiocarcinomas and other invasive liver cancers) accounts for approximately 1.5% of cancer deaths in South Australia. The five-year disease specific survival for HCC (including the small number of cholangiocarcinomas and other invasive liver cancers) from 1998-2007 is only 16%. South Australian data for survival outcomes for HCC are shown in Table 2. Data show an encouraging decline in case fatality for HCC for more recently diagnosed cancers. The improved survival in more recent eras could reflect earlier diagnosis with curative therapy. An increase in case fatality with advancing age is also demonstrated.

<table>
<thead>
<tr>
<th>Diagnostic period</th>
<th>Relative risk of fatality</th>
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</thead>
<tbody>
<tr>
<td>1977-90 (reference) (n=296)</td>
<td>1.00</td>
</tr>
<tr>
<td>1991-97 (n=247)</td>
<td>0.60</td>
</tr>
<tr>
<td>1998-2007 (n=677)</td>
<td>0.39</td>
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</tbody>
</table>
2.3 Ethnic and socio-economic differences
The data from Luke et al\textsuperscript{12} confirm a statistically significant higher incidence for HCC in people of Asian background. This is likely to reflect endemic rates of viral hepatitis (both hepatitis B and C) from these areas of migration. Neither socio-economic status nor Aboriginality were statistically significantly associated with worse case fatality. Unpublished data from Davis et al show that the Northern Territory has a high incidence rate of HCC, particularly amongst the indigenous population.

2.4 Conclusion
The incidence and mortality rates for HCC in South Australia are increasing rapidly and the NT represents a high incidence area for HCC, particularly in the indigenous population. Overall 5-year survival from HCC is poor but has improved in more recent eras. Improved survival likely with earlier detection and given the availability of effective screening and curative therapies for early HCC, an appropriately resourced and co-ordinated statewide response is urgently required.
3 HEPATOCELLULAR CANCER PATHWAY

The South Australian Hepatocellular Cancer Pathway is a guide to the optimal management and care of patients diagnosed with HCC. The pathway provides a guide for the patient journey to ensure patients with HCC and their families receive optimal care and support.

In South Australia hepatocellular cancer contributes to approximately 1.5% of all cancer deaths (including the small number of cholangiocarcinomas and other invasive liver cancers)\textsuperscript{13}. There is an identified need to improve outcomes for patients with hepatocellular cancer both in terms of services to those patients with potentially curable disease and for the majority of the patients who die from their disease. As treatment modalities for patients with hepatocellular cancer become increasingly complex, a coordinated service provision between private and public hospitals, general practitioners, community and palliative care services is essential.

The pathway provides recommendations based on current evidence for best practice in the management of patients diagnosed with HCC. It adopts a multidisciplinary approach with involvement of all relevant professionals in the care of patients.

Adherence to Pathway recommendations will not ensure a successful outcome in every case, nor should they be considered as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement must be made by the appropriate health care professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan.

Recommendations should be followed subject to the health professional’s independent medical judgment and the patient’s preference in each individual case. Final decisions should be made only after discussion of the diagnosis and available treatment options with the patient. It is advised, however, that significant departures from the SA Hepatocellular Cancer Care Pathway should be documented in the patient’s case notes at the time the relevant decision is taken.
4 MULTIDISCIPLINARY AND COORDINATED CARE

Multidisciplinary team care is an approach to health care that is critical to treatment planning and ongoing management and is provided by a team who meet regularly either face to face or via teleconferencing/videoconferencing to prospectively plan care and treatment for all patients with HCC. This approach to care is essential for patients with HCC regardless of location (rural/metropolitan) or insurance status (public/private).

4.1 Benefits of multidisciplinary care

- Demonstrated benefits include:33
- Increased provision of evidence-based care in accord with clinical practice pathways (where available) with implications for both clinical outcomes and cost effectiveness
- All treatment options are considered and treatment plans are individualised to each patient
- Improved referral pathway
- Decreased variation in care
- Increased referrals for psychosocial support
- Increased discussion of patient eligibility for clinical trials
- Enhanced clinical education opportunities
- Opportunity for clinicians to interact.

4.2 Multidisciplinary care principles

A team approach14 15

- An established multidisciplinary team (MDT) that comprises relevant core disciplines, including allied health and psychosocial health specialists.
- The general practitioner is regarded as a team member and effective communication processes between the multidisciplinary team and the general practitioner are established.
- Effective communication processes exist with access and referral links between all core and non-core team members.
Communication among team members

- All the core team members regularly attend multidisciplinary team meetings to provide input into diagnostic, treatment, supportive and palliative care planning.
- Processes are in place for communication of treatment recommendations and care plans between core team members.

Access to the full range of therapeutic modalities for all patients, regardless of geographical remoteness or size of institution

- All patients regardless of where they live will have information about and access to relevant treatment and services.
- Clinical trial involvement is considered for all eligible patients who will be undergoing cancer treatment.

Provision of care in accordance with agreed standards/pathway

- Decisions, protocols and care pathways are in line with current best practice, including standards, research and where these are not available, currently accepted approaches to treatment.
- All the relevant diagnostic results, reports and pathology and radiology images are available for multidisciplinary team meetings.
- Professional development activities for all multidisciplinary team members are offered and supported.

Involvement of patients in decisions about their care

- Patients are informed of the multidisciplinary team care.
- Patients are informed of the multidisciplinary team recommendations, provided with information about all aspects of their treatment and participate in the decision making process.
- Patients are routinely provided with suitable information about and access to supportive care services.

4.3 Hepatocellular Multidisciplinary Teams in South Australia
There are currently two HCC multidisciplinary teams that operate in South Australia, one at the Royal Adelaide Hospital and the other at Flinders Medical Centre. Details of times of meetings and how to refer patients can be found in Appendix 7.
**HCC multidisciplinary team members**

The recommended core members of a HCC multidisciplinary team are:

- Hepatologist / Liver Transplant Physician
- Hepatobiliary / Liver Transplant Surgeon
- Interventional Radiologist
- Specialty Registrar
- HCC Nurse coordinator
- Dietician
- Social worker
- Medical Oncologist

The team also should have access and referral processes to:

- Psychologist
- Nuclear Medicine Physician
- Radiation Oncologist
- GP
- Pathologist
- Pharmacist
- Geriatric Cancer Assessment Team
- Adolescent and Young Adult Cancer Assessment Team
- CALD and ATSI services
- Welfare worker
- Rural/remote liaison nurse
- Clinical trials coordinator

When specific expertise is required from non-core members, an effort will be made to inform that member in advance so that they have an opportunity to attend the meeting.

**Role of General Practitioner in Hepatocellular Cancer care**

Management of HCC is complex and requires the skills of specialists in a multidisciplinary setting. Increasingly, the role of GPs in management of cancers at all stages, from early diagnosis to palliation, is being strengthened. Furthermore, recent data looking at outcomes in follow-up of other cancers by GPs (colorectal and breast) are equal to that of specialists. Although there is no specific data for HCC, current data from other cancers may suggest GPs can play a valuable role in diagnosis and HCC management.
It is recommended that patients with HCC, as well as their treating specialist, remain in close contact with the primary GP throughout the duration of the treatment. This will ensure a holistic approach to the overall cancer management, investigations being performed in a timely manner, as well as smooth transition from tertiary to primary care should this be required.

The treating specialist should detail the surveillance plan for de novo or recurrence of HCCs, in cirrhotic and non-cirrhotic patients, to the primary care doctor to ensure the roles are clearly defined. Ongoing joint care between the specialist and GP for management of underlying factors predisposing to HCC (cirrhosis or chronic HBV infection) is still recommended.

**Role of Specialist Nursing and care coordination in Hepatocellular Cancer**

Specialist nurses have a developing role in the management of patients with cirrhosis and HCC. Nurse co-ordination of care for patients with liver failure has shown benefits with respect to patient attendance at outpatient care, hospital utilization, and quality of care including adherence to screening for HCC\(^\text{26}\).

The involvement of general practice nurses in HCC screening is also currently being piloted in South Australia. Specialist nurses have also played an important role in the co-ordination of HCC MDT meetings in South Australia at both the RAH and FMC sites.

The Hepatocellular Cancer Nurse Coordinator (HCC NC) plays a pivotal role in managing complex HCC information whilst supporting the needs of patients and their carers. The position encompasses nursing assessment, patient care, education and advocacy within a multidisciplinary framework.

The HCC NC ensures high quality patient care by managing and monitoring the implementation of the patient care plan post multidisciplinary team decisions. The HCC NC manages and monitors surveillance protocol and processes for those patients identified as being at risk.

The HCC NC provides patients, their carers and the primary and tertiary treating team with a central point of contact. The HCC NC plays a critical role in patient treatment, education and symptom management, linking patients with support services and supporting patient choices around treatment and care within an increasingly complex health care system. The diversity of this patient group
accentuates the need for continuity and coordination of care between multiple health providers and settings.

This role includes but is not limited to:

- Coordinating patient care in conjunction with other health care professionals in primary and tertiary settings.
- Management of patient care plans developed in multidisciplinary team setting.
- Facilitation of informed consent, including patients understanding of the disease, related investigations and treatment regime.
- Provision of specialised verbal and written information to enhance the patients understanding of and participation in decision making about their care.
- Provision of culturally appropriate information, with involvement of a qualified interpreter as required.
- Requesting appropriate investigations in accordance with protocols.
- Reviewing and reporting diagnostic results.
- Assessment and screening of patients psychosocial needs and referral to appropriate professionals/support services.
5 SUPPORTIVE CARE

5.1 Supportive care principles

Supportive care is an ‘umbrella’ term used for all health services (generalist and specialist) that may be required to support people with cancer and their families and/or care givers.

The spectrum of supportive care includes:

- management of physical symptoms and side effects across the cancer continuum
- management of psychosocial issues
- enhancing rehabilitation
- promoting healthy lifestyles with health risk reductions strategies
- monitoring functional status
- survivorship
- end of life care

Supportive cancer care addresses various domains including:

- physical
- psychological
- social
- spiritual
- information

All needs must be addressed in a culturally and linguistically appropriate manner. Specific supportive care needs for persons with Hepatocellular cancer are considered in Chapter 7.
Providers of supportive care

All members of the multidisciplinary team have a role in the provision of supportive care. In addition, the patient may have support from family, friends, support groups, volunteers, and other community-based organisations.

Research indicates that people with cancer who receive appropriate information and psychosocial interventions have lower rates of anxiety, mood disorders, nausea, vomiting, pain, as well as a greater knowledge and understanding about their disease and treatment. The type and degree of interventions to meet the supportive care needs for patients and their caregivers will vary throughout the cancer journey; many patients’ needs will be met adequately through the provision of general information, while some patients will require specialised intervention.42

Achieving best practice in supportive care 43,44

Supportive care service provision requires an initial assessment and identification of the patient’s specific needs. This is achieved through regular discussion and systematic review of the patient and their caregivers. Regular reassessment is
essential, as needs frequently change throughout the cancer journey.

This review process assists in identifying those patients who are experiencing significant levels of distress and are at higher risk of psychological morbidity, and facilitates appropriate referral for further assessment and specific interventions. The Australian Clinical practice guidelines for the psychosocial care of adults with cancer and the National Comprehensive Cancer Network’s clinical practice guidelines for distress management recommend the use of a validated screening tool such as the Distress Thermometer.

Establishing a supportive care model

As a range of professionals and services provide supportive care, it is important to have in place:

- Patient’s and carers have their supportive care needs systematically identified as part of a multidisciplinary best-practice approach to cancer care
- A detailed assessment of supportive care needs will help identify those patients who require more specific one-one intervention and follow-up
- A clear referral pathway to specialised supportive care services
- A skilled workforce with the ability to assess patient needs, deliver support and/or enable referral onto specialist supportive care providers at suitable points in the patient’s cancer journey
- Promotions of supportive care as integral components of cancer service delivery, including information about the range of professional services available so that patients can self refer or self identify a need.
- Adequate communication between health services, to enhance referral and linkage of supportive care services.

Other specific information needs may include:

- Aboriginal and Torres Strait Islander peoples and culturally and linguistically diverse communities have specific informational needs that require culturally appropriate resources (Aboriginal cancer care co-ordinators/ local Aboriginal Health Service may be able to assist patients and care giver(s) in their region).

Communication with patient and care givers

Patients require verbal and written information that is culturally appropriate and may require access to a qualified interpreter (accredited by the National Accreditation
Authority for Translators and Interpreters (NAATI). Information required includes details about the disease, preventative actions, the reasons for and likely effects of diagnostic procedures, treatment options (including known risks and potential adverse effects), and information about effective coping strategies. Patients and carers should receive both individual support and guidance and well-produced, culturally appropriate information leaflets, or quality web-based information.

It is recommended that health care providers ask patients if they want additional information and discuss how much they wish to be involved in decisions about treatment. Determine the patient’s needs and preferences regarding information about treatment, and encourage family members, care givers and/or others who may provide support to the patient during consultations. Specific instructions for self-care may enable patients and family members to maintain their desired level of independence throughout the cancer care journey.49

All health professionals involved should know what information has been given to each patient. A record of this, along with the patient’s preferences for information and involvement in decision-making, should be included in the notes and given to the patient’s general practitioner, together with a comprehensive summary of the management plan. Communication needs to be effective, with fast and efficient links between hospitals and primary care teams.50

5.2 Respecting diversity

Culturally and linguistically diverse communities

Australia has one of the most culturally diverse communities in the world. In 2011, one in four of Australia’s population was born outside of Australia.51 It is therefore essential to consider the culturally and linguistically diverse needs of all people in relation to diagnosis, treatment and management of cancer.52

- All consumers/patients are individuals and require a person-focused approach to care
- Health professionals should engage in respectful enquiry about preferences that intersect with health care, including religious or spiritual values, cultural values, gender preferences and dietary requirements. These aspects are connected to a successful health care experience and outcomes53
- Within the culturally and linguistically diverse community, language barriers and lack of knowledge of the South Australian health care system may limit access to health information and health care services. People may have a variety of cultural perspectives or preferences that health professionals need
to consider such as;

- Patient preference to see a medical professional of their own sex
- Cultural misconceptions about cancer diagnosis
- Cancer may be a taboo subject or cause discrimination, contamination, shame, or retribution
- Religion may play a fundamental role in the person's attitude towards their disease and treatment
- Family members often share rights and responsibilities for decision-making, which may influence the choice of treatment
- Wherever possible, patients should be offered the opportunity to bring a family member or friend with them to consultations and treatment. 54

**People from Aboriginal and Torres Strait Islander Backgrounds**

The concept of health and well-being for Aboriginal and Torres Strait Islander people is a holistic one, encompassing all aspects of physical, emotional, social, spiritual and cultural wellbeing and a specific kinship with family.55,56 For many Aboriginal and Torres Strait Islander people, wellbeing is determined socially, rather than biologically or pathologically.57,58 Given the powerful role of traditional beliefs about illness and health, it is important when managing the health care of Aboriginal and Torres Strait Islander people to include the input of those who are familiar with their culture and language and to incorporate specific understandings of the needs of those residing in rural and remote areas.59

Many Aboriginal and Torres Strait Islander people take time to develop a relationship of trust with health care providers. Having access to the same clinician or health care worker in a health care setting over an extended period of time can be beneficial. Many feel overwhelmed and intimidated when approached by doctors, and are often reluctant to answer questions when asked. Assistance with navigation through the broader system by cancer care co-ordinators (and continuity of care) is a critical aspect of care for managing the health care of Aboriginal and Torres Strait Islander people. Cancer care coordinators by attending appointments with patients can ensure that they have understood what they are consenting to, and that relevant cultural information is also passed on.
Rural Patients
Clinicians referring patients from rural and remote communities for treatment and support services for cancer need to ensure that patient and their families are informed about assistance for travel and accommodation costs. The cancer care coordinator can provide a multidisciplinary care link for rural patients and specialist rural nurses for programs or interventions requiring psychological support. Remote technology allowing patients access to counselling, and enhancing skills of rural nursing staff have been demonstrated to improve psychological support.

**RECOMMENDATIONS**

Make dot point recommendations for Supportive care
6 SPECIFIC SUPPORTIVE CARE NEEDS OF PEOPLE AFFECTED BY HEPATOCELLULAR CANCER

6.1 Supportive care principles of Hepatocellular Cancer

The spectrum of supportive care includes:

- Assessment, monitoring and management of physical and psychological symptoms and side effects across the HCC continuum from the diagnostic period through treatment to post-treatment care.
- Enhancing rehabilitation
- Secondary cancer prevention
- HCC recurrence minimization
- Survivorship support and care
- End of life care

Supportive care for patients with HCC and their families and/or caregivers is an integral component of evidence-based best practice clinical care. Research indicates that people with cancer who receive appropriate information and psychosocial interventions have lower rates of anxiety, mood disorders, nausea, vomiting, pain, as well as a greater knowledge and understanding about their disease and treatment.

6.2 Drug and Alcohol Counselling for patients with alcoholic liver disease

Alcohol and other drug use may be an important aspect in the aetiology/exacerbation of the patient’s HCC as well as have an adverse effect on the treatment of the HCC and their psychosocial, physical and behavioural functioning. Assessment of the patients substance use by a specialist that is experienced in the substance use field should be given high priority.

The Drug and Alcohol Service SA provide a variety of assessment and treatment modalities at various sites in the metropolitan and country area. Contacts for these services can be found in Appendix 5. Initial contact for all service requests can be made by contacting the Alcohol and Drug Information Service (ADIS), a 24 Hour over the phone assessment or advice on 1300 13 13 40.
6.3 MEDICAL SUPPORTIVE CARE NEEDS/TREATMENT OPTIONS OF PEOPLE AFFECTED BY HEPATOCELULAR CANCER

6.3.1 Medical Management of Liver Disease
Assessment of liver disease is an essential part of HCC care as the majority of patients will have underlying liver disease and cirrhosis. Unlike other cancers the severity of underlying organ failure greatly impacts on overall survival and eligibility for cancer therapies. Treatment of the underlying liver disease and complications of liver failure must always be addressed in addition to cancer therapy. For this reason the hepatologist will usually play the central co-ordinating role in the multi-disciplinary team, assessing both liver disease and the suitability of therapies.

6.3.2 Assessing the cause of liver disease
The main causes of cirrhosis and liver disease that lead to HCC in Australian settings include; alcohol, viral hepatitis (hepatitis B and C), non-alcoholic fatty liver disease, cholestatic liver disease (primary biliary cirrhosis and primary sclerosing cholangitis), autoimmune liver disease and metabolic liver disease (haemochromatosis, Wilson’s disease, Alpha-1-antitrypsin deficiency). Most of these disorders have disease specific therapies which can both reduce the mortality from intrinsic liver disease and from HCC. A thorough search for the causes of liver disease and optimization of disease specific therapy is essential in all patients diagnosed with HCC.

6.3.3 Assessing the severity of liver disease
As the severity of underlying liver disease influences HCC therapy, this must also be accurately assessed in all patients with HCC. Traditional severity scores include the Child’s Pugh and MELD scores.

The Child’s Pugh score (appendix 1) is composed of 5 components; bilirubin, albumin, INR, degree of ascites and degree of encephalopathy. This score describes three main categories with substantially different prognosis from liver disease; Child-Pugh class A (well compensated with anticipated 100 % 1-year survival), Child-Pugh class B (significant functional compromise with anticipated 80% 1-year survival) and Child-Pugh class C (decompensated disease with anticipated 45% % 1-year survival).

The MELD score (Appendix 2) is a logarithmic equation derived from three laboratory parameters; bilirubin, INR and creatinine. Higher scores are associated with poorer
prognosis. A score of 15 is the usual threshold indicating that the patient prognosis would benefit from liver transplantation, if contra-indications do not exist.

An assessment of portal hypertension is also critical, as presence of significant portal hypertension will influence eligibility for some HCC therapies. Portal hypertension can be assessed clinically (presence of ascites, history of variceal bleeding), radiologically, endoscopically (presence of oesophageal/gastric varices) and via direct invasive measurement of the hepatic venous pressure gradient (HVPG).

6.3.4 Assessing and treating complications of liver failure
Once liver failure/decompensation occurs a variety of complications may develop, in addition to HCC. These may occur regardless of the primary cause of liver disease. Common complications include; ascites and spontaneous bacterial peritonitis, variceal bleeding, encephalopathy, sepsis, renal dysfunction and protein calorie malnutrition and cramps. Rarer liver failure complications include; hepato-pulmonary and porto-pulmonary syndromes and cardiomyopathy. Many of these complications have specific preventative therapies and symptomatic therapies which can reduce mortality and improve quality of life. Preventing or treating these complications is a crucial part of the management of all cirrhotic patients with HCC.

6.3.5 Treatment of Viral Hepatitis
Patients with HCC and associated viral hepatitis should be referred to a recognized centre for treatment of their hepatitis B or C. As the majority of patients will have cirrhosis or advanced fibrosis, referral to hepatology clinic is recommended. A list of hepatology clinics is included in Appendix 6.

It should be noted that viral hepatitis therapy continues to evolve rapidly for both hepatitis C and B patients. Sustained virological responses for hepatitis C can be obtained in over 75% of cases for all genotypes. Current antiviral therapy for hepatitis B can achieve long-term viral suppression, without resistance in the majority of patients.

Achieving an SVR for hepatitis C patients or viral suppression for hepatitis B patients has been shown to reduce the long term risks of new HCC’s and is therefore a crucial aspect of cancer HCC prevention.
6.3.6 Nutritional support in Hepatocellular Cancer

There are no recommendations regarding nutrition and HCC per se; however 95% of patients with HCC have underlying liver cirrhosis and hence nutrition support recommendations will be based upon liver cirrhosis.

Around 80% of patients with cirrhosis are malnourished, including up to 25% of patients with Child’s Pugh class A liver disease.\(^{29}\) Further, there is clinical evidence that malnourished patients with liver disease have increased risk of morbidity and mortality.\(^{30}\) Early nutritional intervention can prolong life expectancy, improve quality of life and reduce complications associated with liver disease.\(^{31}\)

The small number of patients with HCC and no background liver cirrhosis (5%) are unlikely to have nutritional issues during their treatment. However, if Sorafenib is prescribed nutritional status can be affected and hence a referral to a specialist dietitian may be required.

**Nutritional Goals**
- To improve protein-calorie malnutrition
- To correct any nutritional deficiencies

**Nutritional Screen**
- ESPEN guidelines (2006) recommend the use of anthropometry to accurately assess nutritional status (Grade C evidence)
- Screening tools such as the MUST can be used but care must be taken with interpreting results secondary to fluid retention in patients with liver disease.\(^{32}\)

**Nutritional Assessment**
- Cirrhosis: Energy intake aim 35-40 kcal/kg/day and protein intake aim 1.2-1.5 g/kg/day actual body weight (Grade C evidence)
- Without cirrhosis: Energy intake aim 25 kcal/kg/day and protein intake aim 0.8 g/kg/day actual bodyweight or adjusted body weight if patient is obese.\(^{33}\)
- No added salt diet (2g/day) is accepted clinical practice to assist minimising fluid retention (ascites, oedema). No ESPEN recommendation.
- Oral nutrition support is indicated when energy and protein targets cannot be achieved through diet alone despite advice from a specialist dietitian (Grade C evidence) and supplemental tube feeding (even in the presence of oesophageal varices) is highly recommended if diet and oral nutritional support fails (Grade A evidence).\(^{1}\) Whole protein formulas are recommended and concentrated high energy formulas can be used in patients with ascites (Grade C evidence)
- Vitamin and mineral supplementation:
Deficiencies can occur as a result of prolonged poor oral intake and malabsorption due to liver disease or medications\textsuperscript{34}

- Fat-soluble vitamins A & D, Folate, B1 (Thiamine), B6 (Pyridoxine), B9 (Folic Acid), B12 (Cyanocobalamin), Zn, Mg may be at risk of deficiency and hence supplementation may be required\textsuperscript{35}
- No ESPEN recommendation

- Monitoring:
  - Tricep skin fold (TSF) and mid arm muscle circumference (MAMC) to be done 3-monthly by dietitian\textsuperscript{36 37}.
  - Hand grip strength is useful when measured serially (weekly or monthly) and evidence shows that lower handgrip measurements correspond with increased rates of complications in patients who are malnourished. Hand grip strength can be done by the dietitian as part of their anthropometric assessment\textsuperscript{38 39}
  - No ESPEN recommendation regarding frequency of anthropometry

- Sorafenib and nutrition (www.macmillan.org.uk www.drugs.com)
  - Gastrointestinal side-effects: diarrhoea (43%), nausea (23%), anorexia (16%), vomiting (16%), and constipation (15%) have been reported
  - Other side effects: mucositis, stomatitis, (including dry mouth and glossodynia), dyspepsia, and dysphagia
  - Referral to a dietitian can assist with optimising protein and energy intake and hence minimise the impact of nutrition-related side effects (as a result of chemotherapy)\textsuperscript{40}

### 6.4 NEEDS OF SPECIFIC POPULATIONS

#### 6.4.1 Patients living in rural and remote locations
Patients from rural and remote locations should receive an equal standard of care for the treatment of their HCC, relative to patients from the Adelaide metropolitan area. Mechanisms to assist with this goal include the presence of statewide MDT meetings and HCC nurse co-ordinators. These resources should improve the accessibility and implementation of evidenced based care to patients from rural and remote locations.

#### 6.4.2 Patients from non-English speaking backgrounds
HCC occurs commonly in patients from non-English speaking backgrounds due to the high endemicity of hepatitis B in some migrant populations. Hepatitis B has a high
seroprevalence in many Asian, African and Pacific Islander populations. It is vital that interactions with medical services and patient care not compromised by lack of interpreting services or understanding of cultural factors.
When difficulties arise the use of multicultural health services such as P.E.A.C.E (Personal Education And Community Empowerment) may be a useful resource and is encouraged.
Contact details for P.E.A.C.E are as follows;

Address: 49a Orsmond Street Hindmarsh SA 5007
Telephone: (08) 8245 8100
Facsimile: (08) 8346 7333
Nutritional screen by CLD Nurse (either outpatient or inpatient) - use anthropometry\textsuperscript{39}:
- Mid arm muscle circumference (MAMC)
- Tricep skin fold (TSF)
Malnutrition Universal Screenig Tool (MUST) can be used (CLD nurse, other nursing staff, dietitian) but care must be taken when interpreting results due to fluid retention (ascites, oedema)\textsuperscript{35}

- MAMC < 25\textsuperscript{th} %ile or TSF < 10\textsuperscript{th} %ile
  - Referral to specialist dietitian in liver disease.

- MAMC > 25\textsuperscript{th} %ile and TSF > 10\textsuperscript{th} %ile
  - Patient to be monitored by CLD Nurse
  - No added salt (NAS) diet booklet given

Nutritional Assessment:
- Energy: 35-40 kcal/kg/d (actual weight)\textsuperscript{39}
- Protein: 1.2-1.5 g/kg/d (actual weight)\textsuperscript{39}
- No added salt (NAS), high protein diet
  - Salt: 80 mmol/d or 2 g/d
  - Even protein distribution (minimise encephalopathy risk)\textsuperscript{39}
- Small frequent meals, including a late high protein/CHO snack
- Oral nutritional support will be required if unable to meet calorie target via diet
- Routine thiamine supplementation, supplement any vitamin & mineral deficiencies – may need to check vit A & D, Zn, Mg, folate, B6, B12\textsuperscript{41, 42}
- Bowels – check steatorrhoea (cholestatic disease)
- NAS written material given
- 3-monthly TSF and MAMC to determine trend
- Hand grip strength can be used weekly/monthly to monitor protein and functional status\textsuperscript{39}

Nutritional issues related to HCC treatment:
- TACE, RFA, MW ablation has minimal side effects on nutrition
- Oral “chemotherapy” medication Sorafenib can cause nausea/vomiting/anorexia
- Consider:
  - anti-emetic medication
  - small frequent meals
  - oral nutrition support
  - NET feeding may be required if diet and oral nutrition support fails

Pt maintaining nutritional status, continue with current nutritional management:
- Diet +/- oral nutrition support
- 3-monthly TSF and MAMC
- Hand grip strength weekly/monthly

Failure of diet and oral nutrition support
- Pt unable to maintain MAMC
- Pt achieving < 60% of recommended energy

Initiate nasoenteric tube (NET) feeding
- Continuous or overnight feeding
- Whole protein formula, consider concentrated high energy formula if the patient has ascites
- Home Enteral Nutrition program available at all tertiary hospitals
- Wean feeds once oral intake improves

New nutritional issues
- failure to maintain MAMC
- acute deterioration of oral intake
- hyperkalaemia

Referral to specialist dietitian

Maintaining nutritional status
- TSF and MAMC
  - 3-monthly
- Nil new nutritional issues

Continue monitoring by CLD Nurse

Figure 5
Hepatocellular Cancer Nutrition Pathway
7 PREVENTION AND MINIMISING RISK

7.1 Cancer risk factors and prevention advice

“Cancer is one of the most common causes of morbidity and mortality, accounting for more Potential Years Life Lost in South Australia than any other condition”. From present incidence rates by age, at least one in three South Australians would be diagnosed with cancer prior to 75 years of age. During 2008, 9350 new cancer cases were diagnosed in South Australia, along with 3626 cancer deaths occurring. Cancer now represents Australia’s greatest disease burden, ahead of cardiovascular disease. Given the ageing population, cancer incidence is projected to continue rising, with the number of people over 65 years of age set to double by 2051. Current evidence indicates that approximately one-third of cancer deaths in Australia can be attributed to known and avoidable risk factors. Appropriate prevention strategies have the potential to reduce cancer incidence. Use of evidence-based screening programs and increased awareness of appropriate early detection measures can optimize outcomes following a diagnosis of cancer or early treatment of precancerous conditions.

Risk factors

The key modifiable risk factors for cancer are:

- Poor diet
- Smoking tobacco/exposure to tobacco smoke
- High levels of alcohol consumption
- Inadequate exercise or being overweight
- Exposure to ultraviolet radiation

Adopting a healthy lifestyle can reduce the risk of developing cancer. Prevention strategies include:

- Promotion of healthy lifestyles(stopping smoking, healthy diet, healthy weight, limiting alcohol intake)
- Reducing risky behaviours(stopping smoking, being sun smart)
- Screening -participating in the national breast, cervical and bowel cancer screening programs
• Referral (encouraging appropriate, timely referral for investigation of suspicious symptoms)

Further information

The following websites provide additional information about reducing cancer risk:

Drug and Alcohol Services South Australia: http://www.dassa.sa.gov.au
Aboriginal substance Misuse Program / DASSA

7.2 Risk factors for hepatocellular cancer
The main risk factor for hepatocellular cancer is cirrhosis. Many of the causes of cirrhosis represent modifiable risk factors such as;

• alcohol abuse
• chronic viral hepatitis (hepatitis B and C) from injection drug use, tattooing, unsafe sexual practices, and vertical transmission during childbirth
• obesity
• iron overload/haemochromatosis

7.2.1 Vaccination
Vaccination for Hepatitis B is an important primary prevention measure which has been shown to reduce the incidence of HCC in vaccinated populations. In 1996 the National Health and Medical Research Council (NHMRC) recommended a universal hepatitis B vaccination program for infants and adolescents with the universal infant program beginning nationally in 200041.
8 EARLY DETECTION

HCC is curable and the earlier (smaller) the HCC is diagnosed the greater the spectrum of the treatment options and the better the treatment outcome. HCC detected after the onset of symptoms has a dismal prognosis (0%-10% 5-year survival). Major advances in our ability to treat HCC are less likely to come from treating late stage disease and it is therefore important to find early stage disease. HCC screening has been shown to reduce mortality in a randomized controlled trial and is considered cost effective in high risk patients.

8.1 Screening and Surveillance

8.1.1 Who should be screened

Surveillance is recommended for the following groups of patients

1. Hepatitis B carriers if
   - Asian males > 40 years
   - Asian females > 50 years
   - Africans over age 20
   - Family history of HCC (starting from diagnosis of HBV carrier status)

2. Cirrhosis due to
   - Hepatitis B
   - Hepatitis C
   - Alcoholic cirrhosis
   - Genetic hemochromatosis
   - Primary biliary cirrhosis
   - Non-alcoholic fatty liver disease (NAFLD)

8.1.2 Screening of uncertain benefit

Although the following groups have an increased risk of HCC no recommendations for or against surveillance can be made because a lack of data precludes an assessment of whether surveillance would be beneficial.

1. Cirrhosis attributable to
   - α1 antitrypsin deficiency
   - Wilson’s disease
   - Autoimmune hepatitis

2. Non-cirrhotic diseases
   - Tyrosinaemia
Glycogen storage diseases

Familial cholestatic diseases (Progressive familial intrahepatic cholestasis PFIC 1 & 2)

Although cirrhosis is the most important predisposing factor for the development of HCC, chronic hepatitis B without cirrhosis, non-alcoholic fatty liver disease and some metabolic liver diseases also predispose to HCC even in the absence of cirrhosis. For non-cirrhotic hepatitis B carriers not listed above the risk of HCC varies depending on the severity of the underlying liver disease, and current and past hepatic inflammatory activity. Patients with high HBV DNA concentrations and those with ongoing hepatic inflammatory activity remain at risk for HCC.

8.1.3 How is screening performed?

At risk patients should have regular surveillance every 6 months, following an index screening procedure. Screening and surveillance should be with ultrasonography (US).

There is considerable debate regarding the use of serum α-foetoprotein (AFP) in addition to US to screen and survey for HCC. The use of AFP is currently not recommended by AASLD guidelines due to lack of sensitivity. Ongoing research into better serum markers of HCC continues.

Any patient on a Liver Transplant waiting list must be screened and surveyed for HCC. This may prioritise the individual for transplant or determine that they are outside transplant criteria. Patients transplanted for HCC must also continue surveillance for a minimum of 2 years, the peak period for recurrence of HCC.

A large body of evidence suggests that HCC screening is poorly performed in routine clinical settings, with adherance rates usually well below 50 %. To improve adherance to HCC screening it is important that a robust, centralised recall system is in place with the capacity to send patient reminders and to identify and rebook missed radiology appointments. Such systems have been shown to substantially improve adherance rates to screening.
8.2 Improving community awareness

Despite the alarming increase in HCC incidence, this cancer remains rare. Community awareness of this type of cancer is therefore very low. Targeting education to those patients at higher risks of HCC is appropriate (patients with hepatitis B infection, risk factors for cirrhosis, documented cirrhosis). Education of general practitioners about risk factors for cirrhosis and HCC screening is also critical.

8.3 Management of a patient with hepatocellular cancer symptoms

Unfortunately HCC is often asymptomatic until an advanced stage. Common late stage presentations include; jaundice, ascites, pain and weight loss. HCC must be excluded in all cirrhotic patients who present with these symptoms.

Patients who present with advanced disease and liver failure rarely have curative treatment options. This highlights the importance of identifying asymptomatic high risk populations and screening them with 6-monthly ultrasound.
9 DIAGNOSIS AND STAGING

The accurate identification of the number, size and location of HCC is of vital importance for planning of the most appropriate therapeutic intervention.

9.1 Radiological assessment

Current radiological screening for HCC is performed initially with routine unenhanced ultrasound with sensitivity in the detection of early HCC of greater than 60% and a specificity of greater than 90%. Six monthly US is recommended. If a lesion is identified or suspected, second line imaging through dynamic CT or MR is undertaken to further characterize the lesion(S).

Dynamic imaging with CT or MR provides a multiphase image set that allows characterization of lesions based on their enhancement patterns. HCC will enhance early and appear bright on the early arterial study, and in the portal venous phase may remain bright, blend in to background liver or enhance less than the surrounding tissue. Approximately 15-20% of HCC on dynamic imaging will only be seen on the arterial phase series. The sensitivity of multi phase contrast enhanced CT and MR is close to or above 90% for HCC. Diffusion weighted images of the liver are useful as part of the routine liver MRI evaluation and are not currently recommended as stand-alone sequences for identifying HCC in a cirrhotic population.

The recent advent and utilization of gadolinium based liver specific MR contrast agents has improved both lesion detection and lesion characterization. Sensitivity and specificity increases to greater than 90%. These contrast agents (e.g. gadobenate dimeglumine, “Multi-hance” and gadoxetic acid, “Primovist”) are partially excreted through the hepatobiliary pathway by functional hepatocytes. If a lesion does not contain functional hepatocytes, including HCC, then the lesion will appear hypointense (dark) relative to the background parenchyma on delayed T1 weighted images. In addition to improved sensitivity, combined interpretation of dynamic and delayed hepatobiliary phase MR images results in less false positive results compared with using dynamic MR or dynamic CT image sets alone.

Positron Emission Tomography (PET) with F-18 FDG is unreliable in depicting HCC. The sensitivity in the detection of hepatocellular carcinoma has been reported to be as low as 50 - 60%. However, the sensitivity of FDG PET is much higher in poorly differentiated HCC and it may have a role in predicting survival rate and likelihood of tumour recurrence after resection or liver transplantation.
The assessment of tumour response to interventions is determined by the modified Response Evaluation Criteria in Solid Tumors. (Appendix 4 - (mRECIST criteria)

The AASLD (American Association for the Study of Liver Diseases) guidelines have endorsed the following imaging and other guidelines for diagnosis of HCC.

9.2 Biopsy and Histopathological Investigation
Biopsies of lesions should only be considered in the context of the above algorithm and after discussion at the HCC MDT. There is a small (<5%) risk of needle track seeding.

The interpretation of biopsy specimens can be difficult in cases of well-differentiated cancers. Core biopsies are more easily interpreted than needle aspiration specimens and are recommended for diagnosis.

The assessment of cell surface and cytoplasmic markers by immunoperoxidase staining and the ongoing development of molecular markers of HCC offer important supplementery tests to assist in diagnosis.
9.3 Staging
Numerous staging systems have been described for HCC, but only the BCLC staging system incorporates both performance status, as assessed by the ECOG stratification (Appendix 3), and underlying liver function as assessed by the Child-Pugh score (Appendix 1). This staging system also prescribes evidence based therapy treatment on the basis of extent of disease, performance status and Child Pugh Score. This algorithm is shown in section 11.
10 PRESENTATION AT HEPATOCELLULAR CANCER MULTIDISCIPLINARY TEAM MEETING

10.1 The Multidisciplinary model in South Australia
The Multidisciplinary Team Meeting (MDM) provides the opportunity to present and collaboratively discuss the diagnosis, staging and management of all new or recurrent cancer patients. The greatest value will derive from case discussion if full staging and pathological data are available. Clinical trial options and eligibility should be considered during the discussion of each patient. Generation of recommendations from the MDM review is based on;

- Nature of diagnosis
- Consideration of treatment intent
- Consideration of treatment method (observe, surgery, neoadjuvant treatment)
- Consideration of specialist dental care, and other supportive care needs (e.g. nutrition)
- Consideration of co-morbidities and standardised validated functional assessment tools (e.g. eastern co-operative oncology group (ECOG)).
- Early stage disease being considered for potentially curative surgery.
- Surgically resected disease being considered for adjuvant radiotherapy and/or chemotherapy.
- Locally advanced disease being considered for definitive multi-modality treatment.
- Psychosocial support needs, including referral to psychological support for the patients and caregivers.
- Locally advanced disease being considered for palliative treatment.
- Any of the above categories who have been reassessed to consider second line treatment.

10.2 Multidisciplinary Team Involvement
A multidisciplinary team comprises both core and associate team members that can attend via a referral process.

All members are clear about their individual responsibilities for coordination of care, with the referring clinician responsible for patient care until care is formally referred to
another practitioner. For a MDM to be properly constituted and all the skills required to deal with a range of patients, all core team members need to be represented. A specialist medical practitioner (or delegate) can refer a patient to the MDM for discussion and management.

The MDM should be held weekly to allow for timely discussion and management of patients, avoiding delay in investigation and timing of care. This will also meet waiting time targets and provide timely feedback to patients. At the meeting individual patient data from clinical, medical imaging and pathology sources are reviewed in order to provide a tissue diagnosis and TNM stage. Based on clinical characteristics, individual patient preferences and circumstances, as well as the tissue diagnosis and TNM stage, the subsequent MDM discussion aims to develop a consensus treatment plan, which is recorded by the MDM Chair and is communicated to the referring clinician for discussion with the patient. The MDM Chair will also record any significant dissenting opinions in the discussion section of the summary letter.

The recommendations following the MDM discussion regarding treatment should involve collaboration and consensus between relevant clinicians and clinical team/s, ideally through a multidisciplinary team approach.

10.3 Consultation and Decision making with the Patient and Family after MDM Case presentation

The recommendations regarding treatment should involve collaboration and consensus between relevant clinicians and clinical team/s, ideally through a multidisciplinary team approach. The patient's GP should routinely be involved in this process (either by prior contact by a member of the clinical team, or an invitation for the GP to participate in the multidisciplinary team meeting), particularly if the patient has made a request for this to occur. In coming to a consensus regarding the treatment recommendations and options that are to be presented to the patient, it is important that:

- Patients should not be offered a confusing menu of treatment options that are inappropriate to the clinical situation or unlikely to benefit the patient
- A specific treatment option or procedure (e.g. surgery, radiotherapy, and chemotherapy) should not be suggested or recommended without prior discussion with the relevant clinical team which provides this treatment or procedure.
- Disagreements between clinicians and clinical teams regarding treatment
recommendations should be resolved before the patient and family are approached, and the information, even if it includes uncertainties, should be consistent and presented as united opinion.

The clinical assessment the agreed recommendations for treatment must then be discussed with the patient (and family) within three working days. This should be led by a senior clinician from the responsible clinical team supported, ideally, cancer care coordinator (or specialist nurse):

- Explain the diagnosis, prognosis, appropriate options, benefits, risks, and the recommendations of the treating team.
- Uncertainties, including those regarding prognosis or likely response to treatment, should be discussed. Patient preferences should be taken into account.
- If appropriate, provide more detailed explanations of specific treatments and their consequences.
- Determine the level of understanding of the patient and family and clarify information if required.
- Determine if referral for psychosocial support for the patient and family/carer is required
- Information should be provided in clear and non-technical language, and in an honest and sensitive manner.
- There should be awareness of cultural sensitivities, and interpreters should be used if patients speak limited or no English
- There should also be awareness that these discussions are extremely distressing for the patient, and that they should ideally be supported by an accompanying family member or friend.
- Discussions should be held in a room or setting which ensures adequate privacy and comfort

In the process of coming to agreement with the patient regarding the treatment plan:

- Show compassion and understanding for patient and family, and understand that decision making can be extremely difficult in these distressing situations
- Give the patient and family adequate time to make decisions. This may
include deferring decisions until another time, although this option needs to be balanced against the urgency for a decision due to progression of the disease.

- The most important issue is to clarify the **goal** of the treatment plan. Patients need to be clear as to whether the goal of treatment is for **cure**, or if treatment involves a **palliative approach**.

- If treatment is for cure, it is helpful to reiterate the specific steps in the treatment plan.

- If curative treatment is not possible, reassure the patient that they are not being “abandoned” and that a treatment plan with a palliative approach will be developed which aims to ensure their comfort and dignity.

- A specific refusal of treatment must be respected even if this is at odds with the recommendations of the treating team.

- The involvement of the patient’s GP at this stage is often helpful if the patient remains uncertain or needs further support in decision making.

- Consider end-of-life care planning if appropriate and if the patient is ready to undertake this. This may include completion of Advance Care Directives, advance care planning (e.g. Respecting Patient Choices) and the development of resuscitation plans.

When agreement has been reached regarding the treatment plan, and in particular, the goal of treatment, this should be documented by the responsible senior clinician. All relevant members of the multidisciplinary team who will provide care for the patient must be notified, and a copy of the treatment plan should be forwarded to the patient’s GP.
11 TREATMENT OF HEPATOCELLULAR CANCERS

11.1 The BCLC staging system for HCC
The BCLC staging system below is the most widely used and validated system for staging and treatment of HCC.

The BCLC staging system for HCC. *(Revised 2011)* M, metastasis classification; N, node classification; PS, performance status; RFA, radiofrequency ablation; TACE, transarterial chemoembolization; BSC, best supportive care.

**Important notes**
1. South Australian (SALTU) and all Australian liver transplant units have adopted UCSF not Milan criteria for transplantation of early HCC. **UCSF Criteria** are as follows; single lesion < 6.5cm, or multiple lesions < 3cm, largest < 4.5cm and total diameter < 8cm.

2. For very early stage HCC resection should be carefully considered as some RCT data has suggested lower recurrence rates with this approach. Resection should be the first choice in this setting when lesions are in unsuitable anatomical locations for percutaneous ablation.
11.2 Established therapies for HCC
Therapies described below form part of the BCLC treatment algorithm and are their efficacy is supported by randomised controlled trials or represent the current standard of care.

11.3 Percutaneous Radiofrequency Ablation and Alcohol Injection
Various percutaneous techniques have been used to provide curative therapy to early stage HCC. The strongest evidence is for the use of thermal ablation using radiofrequency ablation (RFA) and percutaneous alcohol injection.

Radiofrequency thermal ablation (percutaneous or intraoperative) is performed using a needle-tip electrode that is placed into the visualized tumor. A direct alternating current (460kHz) is delivered, creating local ionic agitation, frictional heat and finally irreversible cellular damage. Coagulative necrosis is achieved when temperatures exceed 50 degrees Celsius; above 60 degrees Celsius cell death occurs almost instantly. Approximately 15-30 minutes are required to perform a 3-5cm ablation. Adjacent vascular structures can produce a ‘heat sink’ and reduce the efficacy of this treatment modality. This method can be used as a stand-alone therapy for the treatment of HCC or in combination with other treatment methods. Whilst the criteria for the use of RFA are not defined absolutely, this method is usually utilized in smaller tumors (<5cm), fewer tumors (typically <3 lesions) and often in patients with underlying hepatic impairment. It is typically a stand-alone technique if the tumor is deemed unresectable on technical grounds or due to portal hypertension. The effectiveness of RFA has been shown to reduce as tumor size increases. RFA can also be combined with TACE as an effective treatment for inoperable hepatic tumors. Multiple ablations can be performed, and RFA has been shown to have both a low rate of morbidity and mortality. Major complications are minimized by appropriate patient selection, optimal placement of RFA probes and adequate protection of adjacent organs. These include correction of coagulopathy prior to the procedure and decubitus positioning during the procedure. The major risks associated with RFA are haemorrhage, bile duct or gallbladder injury, thermal injury to other organs and tumor seeding along the RFA tract.
Direct percutaneous injection of a neoplasm aided by US or CT with alcohol or acetic acid is very effective for tumours < 2 cm diameter. Larger tumours > 2 cm are more commonly managed using thermal ablation electrodes. Randomized control trials have shown that RFA is superior to ethanol injection in the treatment of HCC’s >2cm diameter and has improved long-term survival. Recent studies comparing percutaneous RFA and percutaneous microwave coagulation therapy (PMCT) have shown better results with RFA in the treatment of smaller tumors. RFA results in better survival rates, fewer complications and significantly lower local recurrence rates.

11.4 Liver Resection
The surgical modalities available to treat HCC are liver transplantation and resection. Many patients fall outside the criteria for liver transplantation and, with donor shortage resection becomes the modality of choice to treat HCC in those patients who are suitable candidates. Surgical resection is contra-indicated in the presence of significant underlying parenchymal disease, main portal vein invasion, extra-hepatic cancer or in patients with severe medical comorbidities which would preclude major abdominal surgery.

Most patients with HCC have underlying cirrhosis. In non-cirrhotic patients surgical resection is the mainstay of treatment. In cirrhotic patients, the severity of underlying liver disease determines which patients can be offered resection. When assessing a patient for potential surgery, the essential factors to consider are the severity of the liver disease (Childs Pugh status), the presence and severity of portal hypertension and the size and the location of the cancer to be resected. These factors have a direct bearing on the two major risks which are perioperative haemorrhage and postoperative liver failure. In practice, Childs class B and C patients (decompensated liver disease) are seldom surgical candidates due to the unacceptably high risk of haemorrhage and liver failure.

Patients with Child’s class A (well compensated liver function) and with a suitably located lesion can be considered for resection providing significant portal hypertension is absent. Indicators of significant portal hypertension include wedged hepatic vein pressure gradient pressures > 10 mm Hg, varices on endoscopy or significant collateral vessel on imaging.

The size and location of the target lesion will determine the amount of liver tissue which needs to be resected. This in turn dictates the size of the future liver remnant and will be a key factor in the decision to proceed. A peripherally located lesion in an anterior segment of the liver may be able to be safely removed, whereas the same
size lesion located centrally within the liver is likely to be inoperable on the basis of needing an extensive resection. While there are reports in the literature suggesting that up to 50% resections are feasible in cirrhotic livers, this sort of extensive surgery is likely to carry significant postoperative morbidity, and a mortality rate of possibly 10%.

The assessment of hepatic reserve can be approached anatomically or by an assessment of hepatic function by Indocyanine green (ICG) clearance available at TQEH.

Portal vein embolization may potentially increase the size of the future liver remnant. This involves radiological embolization of the portal vein on the side to be resected, with the aim of causing hypertrophy of the opposite side. The response takes 4 – 6 weeks, and must be documented on follow up imaging before proceeding with the planned resection.

The issue of whether anatomical segmental resection is preferable to local resection with a clear tumour margin has not been definitively established with regard to long term tumour recurrence and patient survival. There is also data to suggest that for small HCC (<2 cm) treatment by tumour ablation with radiofrequency ablation may have equivalent results to surgery.

Patients who have had their HCC resected require ongoing surveillance for recurrence and for development of new cancers as 70% of patients will have recurrence or de novo HCC at 5 years. These patients may be considered for salvage liver transplantation.

In any cirrhotic patient undergoing liver resection, postoperative management is critical and may require combined input from both the surgical and hepatology teams. The particular issues of sodium intake, diuretic therapy, coagulopathy and nutrition all need to be specifically addressed.

Finally, it must be remembered that HCC can arise in non- cirrhotic livers. In these patients, resection can be performed with the same criteria as for non- HCC tumours, with regard to tumour clearance and an adequate future liver remnant.

11.5 Liver Transplantation
Liver transplantation, in selected individuals, is the best curative treatment for hepatocellular carcinoma. Furthermore, it prevents the chance of new (de novo) hepatocellular cancers if the cancer has developed in a cirrhotic liver. The likelihood of cure with transplantation is greatest with small cancers and less than 3 tumours and without evidence of cancer spread beyond the liver.
It is recommended that those who fit the transplant criteria for HCC based on tumour size and number (UCSF criteria), with good physical, mental and social well-being, should be referred to the South Australian Liver transplant Unit for evaluation. Transplantation is not always selected as the preferred treatment option due to a lack of donor organs.

Adjuvant loco-regional therapy for HCC should be given concurrently, prior to or during listing of the patient for liver transplantation, especially if there is a likely delay of >6 months to transplantation leading to progression of disease and adverse outcome.

11.5.1 UCSF Criteria
The Australian (TSANZ) guidelines state that patients may be suitable candidates if they have small HCCs that fulfil the UCSF criteria. These are a single lesion ≤ 6.5cm, or if multiple lesions are present there should be ≤ 3 lesions, the largest ≤ 4.5cm, and a summative diameter of all lesions of ≤ 8 cm. (TSANZ Organ transplantation from deceased donors consensus statement on eligibility criteria and allocation protocols Version 1.1 - 23 June 2011, page 10)

11.5.2 Poor prognostic factors
Poor tumour differentiation, microvascular invasion and rapidly rising and/or a markedly elevated AFP >825 kU/l (>1000ng/ml) are relative contraindications to liver transplantation as they have a poor 5 year survival. Imaging indicating local vascular invasion is an absolute contraindication. Histological confirmation of tumour differentiation and microvascular invasion remains the most accurate diagnostic modality but should only be ascertained at the time of RFA/ microwave ablation or resection to avoid tumour seeding.

11.5.3 Definitive resectional therapy and “salvage” transplantation
Due to the long waiting time for liver transplantation, definitive therapy in place of transplantation such as resection or ablative treatment aiming for cure should be considered. These patients may be considered for “salvage transplantation” if recurrent or de novo (metachronous) HCCs develop (40-50% within 5 years) within the liver during subsequent follow-up. 40-60% of patients that develop subsequent HCC recurrence may not be a suitable candidate for liver transplantation due to local recurrence outside UCSF criteria, extrahepatic spread, deteriorating physical status as well as physiological aging. Patients who are suitable candidates for definitive therapy (mainly liver resection) and potential transplant recipients should be placed on the potential salvage liver transplant list with SALTU.
11.5.4 Bridging therapy for patient on liver transplant waiting list

Patients with HCCs not suitable for definitive resectional or ablative therapy, usually due to advanced liver disease with portal hypertension, poor tumour location and multiple tumours (within UCSF) should be referred for liver transplantation. In the event that they are assessed by SALTU as suitable candidates, bridging therapies should be considered in selected cases. These cases include patients that are likely to wait for more than 6 months and patients with HCCs that are likely to exceed UCSF criteria on the waiting list. Bridging therapies usually involve transarterial chemoembolisation (TACE) or ablative treatment using either radiofrequency ablation (RFA) or microwave. The choice of bridging treatment depends on number, size, portal hypertension and liver function as well as location of the tumours.

11.5.5 Transplantation after downstaging

Downstaging of cancers remains controversial. There have been conflicting data with respect to downstaging with TACE, ablative therapy and combination therapies. Patients that showed initial downstaging to within UCSF criteria and remained within this criteria for 6 months may be considered for liver transplantation. Referral to SALTU for consideration of liver transplantation should be made as soon as there appears to be successful downstaging to within UCSF criteria with at least 3 months of stability. It is anticipated that a further 3 months of observation by a SALTU member will be needed to ensure ongoing tumour stability and commencement of preliminary workup for transplantation.

11.6 Trans-arterial chemoembolisation

Trans-arterial chemoembolization (TACE) of HCC is based on the rationale that HCC derives its blood supply from the hepatic arterial circulation. Candidates are often those with BCLC stage B disease that are not suitable for curative treatments. Pharmaceutical infusion and arterial embolization via selective catheterization using angiography are used to target large, infiltrative and/or multifocal disease and this has been shown to prolong survival in patients not suitable for surgical excision.

In conventional TACE procedures epirubicin is used, combined with lipiodal. The interventional radiologist attempts to achieve a superselective catheterization of the tumour feeding vessel/segmental artery. In a minority of occasions only a selective catheterization of the lobar artery can be obtained. Injection of epirubicin and lipiodol is followed by embolization of the vessel using metal coils or other agents.
There is recent interest in the utilization of drug-eluting beads for TACE that deliver a chemo-therapeutic agent directly to the tumor with controlled and sustained release of a pharmaceutical. This includes Doxorubicin eluting beads (“DC beads”) that can be infused intraarterially for selective tumor targeting and these have so far proven safe and efficient in the treatment of HCC. There is limited randomized data comparing the safety and efficacy of DC beads with conventional TACE. Limited available data suggests lower side-effects but similar tumour responses and higher costs associated with DC beads.

TACE is contraindicated in a number of situations including due to risks of worsening liver failure and lack of benefit. The main contraindications include; low portal vein flow states (thrombosis, reversed flow) and advanced liver failure. TACE can be repeated at regular intervals until complete radiological response of the tumour is observed. Alternatively TACE can be used “a la demande” for when there is radiological disease progression. There is no prospective data to compare these approaches.

11.7 Sorafenib
Sorafenib is recommended for patients with BCLC stage C HCC (portal vein invasion, lymph node involvement or metastatic disease) and is funded under the Pharmaceutical Benefits Scheme Authority Drug scheme for patients who are BCLC stage C and Child Pugh A. Its use is supported by randomized controlled trials showing a modest survival benefit. Patients should also be offered best supportive care including advice on measures to prevent and treat hand foot syndrome (HFS). Pre-treatment removal of calluses and other hyperkeratotic lesions, avoidance of trauma e.g. from ill fitting footwear, application of moisturising creams and careful monitoring for HFS are advised. Dose reductions or cessation of treatment for moderate to severe HFS (grade 2-3) are outlined in the prescribing information. Monitoring of blood pressure is also recommended. Management of the associated liver disease and prevention of complications including endoscopic screening for varices are also recommended.

Patients should also be considered for a suitable clinical trial of systemic therapy particularly if sorafenib treatment is discontinued due to progression or adverse effects. It is hoped that current studies involving genomic analysis of hepatocellular carcinoma will lead to better targeted therapy.
11.8 Other Therapies for HCC
The therapies described below currently are not represented in the BCLC treatment. While these therapies may be effective and have useful roles in some situations there is currently insufficient high quality evidence (randomised controlled trials) for them to be recommended as a standard of care.

11.9 Percutaneous Microwave ablation
Microwave ablation (percutaneous or intraoperative) is used in a similar fashion to RFA and may be more effective in tumours >3cm. Treatment duration is also considerably shorter than RFA and the ‘heat sink’ effect is not encountered.

11.10 Iodine-131 Lipiodol Therapy for Unresectable HCC
Lipiodol has been shown to concentrate in hepatocellular cancer cells and when labeled with Iodine-131 delivers a tumour radiation dose, on average, 8 times the dose delivered to the normal liver when administered directly into the hepatic artery. AS Iodine-131 is the radio-isotope used. Patients require an in-hospital stay of 6-8 days for radiation isolation, followed by several weeks of radiation precautions upon discharge. It is not widely available in South Australia, and only one site, The Queen Elizabeth Hospital, has approval to administer this therapy. The main indication for I-131 therapy includes treatment of unresectable HCC and adjuvant therapy following liver resection. There are several publications from Australian centre’s reporting the outcomes of I-131 Lipiodol therapy for unresectable HCC with an overall median survival of 14 months. Data comparing internal radiotherapy with TACE is limited although recent publications have shown similar survival curves for I-131 Lipiodol and TACE/TAE. However, the former was associated with less toxicity and appeared to offer some survival benefit in patients with PVT and more advanced liver disease.

11.11 Ytrrium-90 SIR-Spheres
The Ytrrium-90 resin (SIR-Spheres) microspheres are injected via the hepatic artery, either selectively or to the whole liver and are taken up within the tumour according to the arterial blood supply. While there is some embolic effect, the main effect is due to the radiation damage. It is a pure beta-emitter and therefore the radiation protection restrictions are minimal. High doses of 50 to several hundred Gray can be delivered to tumours with this technique. Prospective trials with and without chemotherapy in patients unsuitable for or having failed curative treatment have shown good radiological response rates of 30-85% with some studies showing improved survival
compared with historic controls. There is no Medicare rebate for this therapy. However, it is covered by the private health funds for the treatment of liver cancers. It requires an experienced interventional radiologist/nuclear medicine specialist team and currently is only routinely performed at RAH, TQEH and St Andrew's Hospitals. It is associated with more toxicity than Iodine-131 Lipiodol and may be best reserved for those patients with localized disease amenable to selective catheterization. Main portal vein invasion is a relative contraindication to this modality.

Both Iodine-131 Lipiodol and Ytryrium-90 techniques require a diagnostic hepatic angiogram and nuclear medicine injection/imaging to ensure suitable hepatic artery anatomy and exclude significant pulmonary and gastro-intestinal shunting. This is an absolute requirement for SIR-Spheres, although the presence of a small amount of shunting with the Lipiodol is well tolerated and not a contra-indication for therapy. The diagnostic studies can be done on the same day as the Lipiodol therapy (current TQEH protocol) but is always done 1-2 weeks before SIR-Spheres therapy to enable complete embolisation of any relevant gastric/gastro-duodenal vessels.

The efficacy of Ytryrium-90 Sir-Spheres in HCC has been evaluated in a number of non-randomized studies. The ENRY study from Europe has looked at the survival of patients with HCC treated with Ytryrium-90 SIR-Spheres in 325 patients with a median overall survival of 12.8 months which closely correlates with the survival curve from the TQEH experience with I-131 Lipiodol. According to the ENRY trial, radio-embolization may be particularly helpful in four specific patient populations. These include, (i) patients who are poor candidates for TACE due to the high number of tumour nodules (>5), (ii) spread to both lobes of the liver, (iii) patients who have previously failed TACE, and finally (iv) patients who are ineligible for TACE because of portal vein occlusion.

11.12 External Beam Radiotherapy
Radiotherapy is generally not considered as a useful modality for the treatment of HCC due to the commonly held beliefs that HCC are radioresistant and the liver is intolerant to radiation. This is based on data which in many cases is over a decade old and usually from retrospective series. There have been major improvements in the localization of tumours including MRI together with advances in the delivery of treatment including more precise 3D planning and Intensity Modulated Radiotherapy, stereotactic body radiotherapy (SBRT) and the use of radio-opaque fiducial markers to aid targeting, sometimes in real-time and combined with respiratory gating. These processes allow more accurate targeting allow the use of tighter margins and smaller
fields which can in turn allow the use of higher doses. This improves the likelihood of local control whilst reducing the incidence of radiotherapy induced liver disease (RILD).

The response of the liver to radiation is however quite complex and variable and depends on a number of factors including the overall dose, dose per fraction, the volume of liver irradiated and the presence of pre-existing liver disease. Our understanding of the tolerance of the liver to radiotherapy in patients with HCC is limited. To what degree these conditions predicate the modification of dose and fractionation is unclear. The addition of systemic therapy may also influence this.

In functional terms the liver is regarded as a “parallel” organ in that no one subunit is critical to the overall function however if enough subunits are damaged then clinically evident RILD will ensue. The volume of liver being irradiated (within reasonable dose ranges) and location of the targeted volume are the most significant predictors of clinically relevant RILD.

A given volume near the surface of the liver can be quite safely irradiated to an extremely high dose with little risk of clinically significant injury in contrast with a similar volume closer to the centre of the organ where the safe dose range would be lower for a given probability of RILD. This is predominantly due to the increased volume of transit tissue traversed by the beams which receives a dose that is less than the target but still high enough to cause injury. It is clear then that trying to standardise treatment or compare results between patients, let alone trials or series can be very difficult.

Retrospective reviews and prospective phase II trials of radiotherapy, (sometimes combined with systemic therapy such as hepatic arterial floxuridine) using historical controls having failed local treatments e.g. surgery, TACE and RFA, have shown that with the use of modern radiotherapeutic techniques it is possible to safely deliver high doses of up to 75Gy fully fractionated or 35-40 Gy as 3 fractions (SBRT) with survival rates superior to historical controls and local control rates of around 67% at 3 yrs. Although this looks promising there is still a high incidence of out-of-field intra-hepatic recurrences of around 40-45% and a 25-30% risk of subsequent distant metastatic disease. Factors predicting better responses include tumours <5cm diameter, higher radiation dose (>53Gy) and Childs-Pugh A. The recurrence rates outside of the radiotherapy field warrants exploring the use of new systemic agents such as Sorafenib together with radiation.

In the absence of prospective randomized trial evidence it is difficult to determine the optimum role for radiation treatment in HCC.
Radiotherapy should be considered in patients with localized small volume or peripheral disease unsuitable for more established modalities with a view to delaying progression and local complications with non-randomised evidence of some survival benefit. This is providing the risk of RILD based on dose/volume factors is considered low. For patients awaiting transplant the use of radiotherapy possibly in conjunction with chemotherapy or TACE can be considered to prevent the cancer progressing beyond UCSF criteria.

Palliative radiotherapy for advanced or metastatic HCC can be considered in the palliation of liver pain and in selected cases with major vein or bile duct obstruction where the tumour volume is not excessive and performance status is adequate. Radiotherapy is also useful to palliate distant metastases along usual lines as with other malignancies.

11.13 Adjuvant Iodine-131 Lipiodol therapy post liver resection
The rate of recurrent intra-hepatic disease is high in patients with HCC, either due to de novo tumour formation in a cirrhotic liver or intra-hepatic metastases of a clonally identical neoplasm. Several studies\textsuperscript{73} \textsuperscript{74} have shown a benefit in disease free survival and overall survival \textsuperscript{75} following the administration of adjuvant I-131 Lipiodol after surgical resection of HCC. This benefit persisted up to 10 years in Chinese patients although it was no longer statistically significant beyond 8 years\textsuperscript{76}. 
12 COMPLEMENTARY THERAPIES

The term 'complementary therapies' encompasses a range of approaches to healthcare aimed at enhancing quality of life and improving well-being. They may be used alongside standard evidence-based medical (conventional) cancer treatments, such as surgery, radiotherapy, chemotherapy, hormonal therapies or biological therapies. Complementary therapies that have been shown to be helpful in the management of the symptoms of cancer and its treatment include: counselling, meditation and relaxation, support groups, art and music therapy, spiritual practices, massage, aromatherapy, reflexology, acupuncture, yoga and physical activity, tai chi, qi gong, some herbal medicine and nutritional advice.

Although the term ‘Complementary and Alternative Medicine (CAM) is frequently used, it is important to distinguish between complementary and alternative therapies. Alternative therapies are used instead of standard evidence-based medical cancer treatments. There is no evidence to support the use of alternative therapies in the treatment of cancer.

It is important that the primary treatment team are aware of complementary therapies, recognise the potential for impact of such therapies in the clinical setting and promote open discussion about these therapies with their patients.

12.1 How complementary therapies may help cancer patients

Complementary therapies are intended to support patient well-being and are not considered treatments for cancer. Although large-scale clinical trials are still needed, there have been many studies of complementary therapies involving patients with cancer. Scientific data is not available that shows an effect on survival, however the results of studies suggest therapeutic benefits of complementary therapies for management of both the symptoms of cancer and the side effects associated with conventional cancer treatment.

Beneficial effects reported for some complementary therapies include:
- reducing pain or use of analgesia
- reducing chemotherapy-related fatigue
- reducing menopausal symptoms such as hot flushes
- reducing acute nausea
- promoting relaxation
- improving sleep
- improving the sense of well-being
• reducing stress, anxiety and depression
• improving overall coping capacity
• promoting a feeling of self worth

However, some complementary therapies can interact with conventional cancer treatments and make them less effective. Others may actually be harmful if taken in combination with conventional cancer treatments82.

12.2 Discussing complementary therapies with patients and/or caregivers

Based on current guidelines267,268 it is recommended that oncology health professionals provide an opportunity for patients to talk openly about complementary therapies in the context of the overall health care plan. The multidisciplinary team should identify which member of the clinical team should be best placed to conduct this discussion.

• All patients with cancer should be asked specifically about their use of complementary and alternative therapies (CAM) at multiple time points in the treatment pathway
• All health professionals should be informed about commonly used CAM and be able to access evidence based information on potential benefits, harm and interactions, in order to advise patients accordingly
• Communication about CAM should be conducted in an open, evidence-based and patient-centred manner by the cancer-specialist clinician.
• Detailed enquiries by the patient and family/carers about those complementary therapies deemed suitable in their particular case should be directed to the complementary therapist/prescriber.
• Responses to questions about CAM use should be documented in the case notes.
• In order to ensure that those patients considering Complementary Therapy are well informed, they should be offered the Understanding Complementary Therapies booklet and/or the Cancer Council SA Helpline number (13 11 20) both of which provide balanced, evidence-based information about the advantages and limitations, including contraindications, of complementary therapies. A brochure providing guidance to identifying qualified complementary therapists should also be offered.
12.3 Evidence based tumour specific complementary therapies

Medical practitioners will always initially encourage patients to follow evidenced based therapies for HCC.

Given the possible liver toxicity of some complimentary therapies, patients should always disclose any such medications which are being taken to their treating clinicians. A list of potentially harmful and hepatotoxic complimentary therapies is provided in Appendix 9.

The failure of conventional medical therapy may lead to further discussions about the use of complimentary therapies.

Further information resources


Useful web sites on complementary and alternative therapies

- Quackwatch is an international network of people who are concerned about health-related frauds, myths, fads, fallacies, and misconduct. The website has a search engine of therapies and services. http://www.quackwatch.com/
- The Memorial Sloan Kettering Cancer Centre (US) webpage ‘About Herbs, Botanicals & Other Products’ at www.mskcc.org/mskcc/html/11570.cfm provides objective information for oncologists, healthcare professionals, and consumers. Note: this is an American website and not all of the products listed may be available in Australia.
- BC Cancer Centre http://www.bccancer.bc.ca/PPI/UnconventionalTherapies/default.htm
- Natural Standard http://3rdparty.naturalstandard.com/frameset.asp
- National Centre for Complementary and Alternative Medicine
RECOMMENDATIONS

- All patients should be specifically asked about their use of complementary and alternative therapies (CAM) at all points of their cancer journey. This communication will help prevent adverse events and increase overall knowledge of the potential advantages and limitations of CAM therapies with conventional therapies.

- Patients should have access to the Understanding Complementary Therapies booklet and the Cancer Council SA Helpline number (13 11 20)

- There is a need for a greater inclusion of training experiences in Aboriginal and Torres Strait Islander use of bush medicine in programs for health professionals.
13 FOLLOW UP CARE

All patients with HCC are at risk of recurrence and new (de novo) HCC’s and require lifelong surveillance. This is because of a “field effect” within the injured/cirrhotic liver.

13.1 Post Treatment surveillance
Those who received loco-regional therapy for management of HCC require ongoing imaging of the liver, not only to access efficacy of treatment success, but also the potential development of new de novo tumours. There is no clear consensus on the ideal imaging modality or timing interval post loco-regional treatment to reassess growth characteristics. However, Guidelines from the National Comprehensive Cancer Network (NCCN)\textsuperscript{83} and American Association of the Study of Liver Diseases (AASLD)\textsuperscript{84} would suggest;

- Imaging every 3-6 months for first 2 years. After 2 years of recurrence free survival, this period can be extended.
- AFP for monitoring tumour recurrence if elevated pre-treatment at 3 monthly intervals for 2 years. However, this does not replace the need for reimagining.
- No clear guideline on which imaging modality to be used post therapy. In general, using the same modality (CT or MRI) as the one pre-treatment allows for best comparison.
- Underlying cause of liver disease and management of complications of cirrhosis (if any) need to be addressed.

In summary, it is recommended that the definitive plan of the timing of restaging, as well as which modality to use to assess growth of HCC post loco-regional therapy be decided in a multidisciplinary setting.
14 CANCER RECURRENCES

Recurrence if detected early may be curable in some instances. Generally post treatment surveillance will be with 3-6 monthly imaging (±AFP) for the first 2-years, as this is the most common time frame for recurrence post a curative therapy.
15 PALLIATIVE CARE

15.1 Palliative interventions and care

The World Health Organization defines palliative care to be ‘an approach which improves the quality of life of patients and their families facing life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other physical, psychosocial and spiritual problems\textsuperscript{274}

All professionals caring for cancer patients should assess palliative and supportive care needs in initial treatment planning and throughout the illness. Specialist Palliative Care teams will often work in a consultative role with the patients primary health providers arranging the provision both of relief from symptoms and symptom control, social and psychological support for patients and their carers when these needs cannot be met by primary care teams\textsuperscript{275}, across a range of health care services, from the acute setting to hospice or in the community.

When the end of life phase is approaching, the focus of care moves much more toward comfort and care. This is where the palliative care team may become the primary specialist service involved, working alongside the patients general practitioner and other primary care providers. Such transition is best done in a coordinated fashion between the specialist groups so that the patient understands the reason for transition, how it will occur and ensures the patient continues to feel well supported.

Table <insert number here>: When to refer to a specialist palliative care service?

<table>
<thead>
<tr>
<th>When</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early referral</td>
<td>Recommended as soon as disease is diagnosed as incurable- in recognition of the high likehood of complex symptoms.</td>
</tr>
</tbody>
</table>

15.2 End of Life Care

Although most patients prefer care at home as much as possible, this can be challenging at end of life and involvement of the general practitioner is crucial\textsuperscript{293}. Referral to a palliative care service will enable the allocation of a specialist nurse to the patient and ensure that maximal community supports are provided in a coordinated fashion and in accordance with the patient's needs. Palliative care service involvement facilitates the 24 hour expert consultative support that home care usually requires. Admission to an appropriate inpatient facility can be organised if
needed. Use of a Care of the Dying Pathway is considered best practice in ensuring symptom management is comprehensive

**Advanced Care Planning**

Advanced care planning is a process that enables an individual to express their wishes about his or her future health care.

Conversations about the focus of care and the treatment options available should be held early in the course of the disease while the patients have the ability to do so.


When the end of life phase is approaching, the focus of care moves much more toward comfort and care. Such a transition is best coordinated between the specialist groups so that the patient understands the reason for transition and how it will occur. There is a balance between ensuring ongoing care and support, whether continuing medical consultations are necessary and not engendering a sense of abandonment.

<table>
<thead>
<tr>
<th>Advanced Directives</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticipatory Direction</td>
<td>• Patients or parents of children can give directions about the medical treatment they do, or do not want for themselves or their child towards the end of life.</td>
</tr>
<tr>
<td>Medical Power of Attorney</td>
<td>• Patient may appoint a medical agent with the power to make medical decisions, in case the patient loses the ability to make or communicate such decisions themselves.</td>
</tr>
<tr>
<td>Enduring Power of Guardianship</td>
<td>• Patient may appoint a guardian to make lifestyle decisions towards the end of life, in case the patient loses the ability to make or communicate such decisions themselves.</td>
</tr>
</tbody>
</table>
Further information:

Therapeutic Guidelines [www.tg.com.au]
Palliative Care Australia [www.palliativecare.org.au]
Palliative Care Council of Australia [www.pallcare.asn.au]

National palliative care service directory

Respecting Patient Choices, Advanced Care Planning
[www.respectingpatientchoices.org.au/]
NCCN Clinical Practice Guidelines in Oncology- Palliative Care
[http://www.nccn.org]

**RECOMMENDATIONS**

- Referral to specialist palliative care service early in the palliative phase to facilitate seamless transfer of care

- All patients and their families and/or caregiver(s) require information regarding bereavement support services, while some require specific assessment and support

- A validated distress tool for specific assessment of patients and their families and/or caregiver(s) is recommended.
16 SURVIVORSHIP

The USA National Cancer Institute describes **Survivorship** in cancer as covering the ‘physical, psychosocial, and economic issues of cancer, from diagnosis until the end of life. It focuses on the health and life of a person with cancer beyond the diagnosis and treatment phases. Survivorship includes issues related to the ability to get health care and follow-up treatment, late effects of treatment, second cancers, and quality of life. Family members, friends, and caregivers are also part of the survivorship experience’.295

**Further information resources and websites:**

- Lance Armstrong Livestrong website [www.livestrong](http://www.livestrong)
- National Coalition for Cancer Survivorship [www.canceradvocacy.org](http://www.canceradvocacy.org)
- Office of Cancer Survivorship [http://dccps.nci.gov/ocs](http://dccps.nci.gov/ocs)
- Oncolink – oncolife survivorship care plans [www.oncolink.org/oncolife](http://www.oncolink.org/oncolife)
- Flinders Cancer Centre and the ACRF Cancer Prevention Unit [http://www.fcic.org.au](http://www.fcic.org.au)
- Peter Mac Cancer Survivorship Care plan [http://www.petermac.com](http://www.petermac.com)
- Journey Forward- for information on survivorship research and care plan [http://www.asco.org](http://www.asco.org)

**RECOMMENDATIONS**

Make dot point recommendations about survivorship
17 APPENDICES

Appendix 1  Child Pugh Score

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albumin g/l</td>
<td>&gt;35</td>
<td>28-35</td>
<td>&lt;28</td>
</tr>
<tr>
<td>Bilirubin umol/l</td>
<td>&lt;24</td>
<td>24-50</td>
<td>&gt;50</td>
</tr>
<tr>
<td></td>
<td>&lt;70</td>
<td>70-170</td>
<td>&gt;170</td>
</tr>
<tr>
<td>INR</td>
<td>&lt;1.7</td>
<td>1.7–2.3</td>
<td>&gt;2.3</td>
</tr>
<tr>
<td>Ascites</td>
<td>Absent</td>
<td>Slight</td>
<td>moderate</td>
</tr>
<tr>
<td>Encephalopathy</td>
<td>None</td>
<td>1 and 2</td>
<td>3 and 4</td>
</tr>
</tbody>
</table>

A 5/6, B 7/8/9, C ≥10

Appendix 2  MELD score

The MELD model that is currently used by the United Network for Organ Sharing (UNOS) in prioritizing allocation of deceased donor organs for liver transplantation is calculated according to the following formula:

\[
\text{MELD} = 3.8[\ln \text{serum bilirubin (mg/dL)}] + 11.2[\ln \text{INR}] + 9.6[\ln \text{serum creatinine (mg/dL)}] + 6.4
\]

where \(\ln\) is the natural logarithm.

For ease of use, a MELD calculator is available via the following link.

Appendix 3  ECOG status

0 – Asymptomatic (Fully active, able to carry on all pre disease activities without restriction)

1 – Symptomatic but completely ambulatory (Restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature. For example, light housework, office work)

2 – Symptomatic, <50% in bed during the day (Ambulatory and capable of all self care but unable to carry out any work activities. Up and about more than 50% of waking hours)

3 – Symptomatic, >50% in bed, but not bed bound (Capable of only limited self-care, confined to bed or chair 50% or more of waking hours)

4 – Bed bound (Completely disabled. Cannot carry on any self-care. Totally confined to bed or chair)

5 – Death
### Appendix 4 mRECIST criteria

Assessment of target lesion response: modified RECIST (mRECIST) assessment for HCC following AASLD-JNCI guideline

**mRECIST for HCC**

- **CR** = Disappearance of any intratumoral arterial enhancement in all target lesions
- **PR** = At least a 30% decrease in the sum of diameters of viable (enhancement in the arterial phase) target lesions, taking as reference the baseline sum of the diameters of target lesions
- **SD** = Any cases that do not qualify for either partial response or progressive disease
- **PD** = An increase of at least 20% in the sum of the diameters of viable (enhancing) target lesions, taking as reference the smallest sum of the diameters of viable (enhancing) target lesions recorded since treatment started

### Table 3 Overall Response Assessment in mRECIST: Responses for All Possible Combinations of Tumor Responses in Target and Nontarget Lesions with or without the Appearance of New Lesions

<table>
<thead>
<tr>
<th>Target Lesions</th>
<th>Nontarget Lesions</th>
<th>New Lesions</th>
<th>Overall Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR</td>
<td>CR</td>
<td>No</td>
<td>CR</td>
</tr>
<tr>
<td>CR</td>
<td>IR/SD</td>
<td>No</td>
<td>PR</td>
</tr>
<tr>
<td>PR</td>
<td>Non-PD</td>
<td>No</td>
<td>PR</td>
</tr>
<tr>
<td>SD</td>
<td>Non-PD</td>
<td>No</td>
<td>SD</td>
</tr>
<tr>
<td>PD</td>
<td>Any</td>
<td>Yes or no</td>
<td>PD</td>
</tr>
<tr>
<td>Any</td>
<td>PD</td>
<td>Yes or no</td>
<td>PD</td>
</tr>
<tr>
<td>Any</td>
<td>Any</td>
<td>Yes</td>
<td>PD</td>
</tr>
</tbody>
</table>

*mRECIST, modified Response Evaluation Criteria in Solid Tumors; CR, complete response; PR, partial response; IR, incomplete response; SD, stable disease; PD, progressive disease.*

**Reference:**
Appendix 5 Drug and Alcohol Counselling providers

1. Alcohol and Drug Information Service (ADIS)
   24 Hour over the phone assessment or advice.
   Initial contact for all service requests
   Phone -1300 13 13 40

2. Eastern DASSA
   Address:  92 Osmond Terrace Norwood
   Phone:   (08) 8130 7500

3. Western DASSA:
   Address: Building 3, the Parks Community Centre, 2-46 Cowan St Angle Park.
   Phone:   (08) 82435715

4. Southern DASSA:
   Address:  82 Beach Rd. Christies Beach
   Phone:   (08) 8326 6644

5. Northern DASSA
   Address:  22 Langford Drive Elizabeth
   Phone:   (08) 8287 5742

6. Aboriginal AOD services – contact ADIS

7. Drug and Alcohol Resource Unit – located within the Royal Adelaide Hospital.
   Provision of an assessment/treatment service to inpatients and out patients.

8. Drug and Alcohol Clinical Advisory Service: a 24 hour service to provide medical advice/support for doctors.
   Number: 8363 8633
Appendix 6  Viral Hepatitis Treatment centres

1. Flinders Medical Centre
   Address:  Hepatology and Liver Transplant Unit, 
             Bedford Park, South Australia. 5042 
   Phone:   8204 6869 
   Fax:     82043943

2. Royal Adelaide Hospital
   Address:  Viral Hepatitis Centre
             Level 7 Outpatient Department
             North Terrace Adelaide 5000
   Phone:   8222 2081
   Fax:     8222 5883

3. The Lyell McEwin Health Service
   Address:  HCV Nurse
             Elizabeth Vale South Australia 5112
   Phone:   8182 9000
   Fax:     8243 5443

4. The Queen Elizabeth Hospital
   Address:  HCV Nurse
             Woodville South Australia 5011
   Phone:   82226000
   Fax:     8243 5443
Appendix 7  HCC MDT meetings in South Australia

Locations and times

There are 2 MDT meetings held in South Australia. Both meetings are held fortnightly. The locations and times are as follows;

1. Royal Adelaide Hospital
   Room: Q7 Conference Room
   Day: Thursday
   Time: 8.00 to 9.00am
   Frequency; fortnightly:

2. Flinders Medical Centre
   Room: 5E Seminar room
   Day: Friday
   Time: 12.45 to 1.30
   Frequency: fortnightly

How to refer to an MDT meeting

This can be done by filling out details of a referral form and faxing/emailing to the relevant MDT co-ordinator.

The MDT referral forms are shown below:
RAH HCC MDT REFERRAL

Consultant: Date:________
Name (or sticker): DOB: GP:

Aetiology of Liver disease:
Varices: please circle
Yes   No   Not evaluated

Previous treatment:

Comorbidities:

Imaging type requested: Location of imaging:

ECOG Performance status: please circle
(Eastern Cooperative Oncology Group)

0 - Asymptomatic (Fully active)  1 - Symptomatic but completely ambulatory
2 - Symptomatic, <50% bed rest, independent self care
3 - Symptomatic, >50% in bed but not bedbound
4 - Bedbound- unable to self care
5 - Death

Lab & date:
Hb: Platelets: INR:
Bilirubin: Albumin:
Creatinine:
AFP: CA 19.9 (if relevant):

Child Turcotte Pugh:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albumin</td>
<td>&gt;35</td>
<td>28 - 35</td>
<td>&lt; 28</td>
</tr>
<tr>
<td>Bilirubin</td>
<td>&lt; 24</td>
<td>24-50</td>
<td>&gt;50</td>
</tr>
<tr>
<td>Bilirubin (PBC)</td>
<td>&lt; 70</td>
<td>70 - 170</td>
<td>&gt; 170</td>
</tr>
<tr>
<td>INR</td>
<td>&lt; 1.7</td>
<td>1.7 – 2.3</td>
<td>&gt; 2.3</td>
</tr>
<tr>
<td>Ascites</td>
<td>Absent</td>
<td>Slight</td>
<td>moderate</td>
</tr>
<tr>
<td>Encephalopathy</td>
<td>None</td>
<td>1 and 2</td>
<td>3 and 4</td>
</tr>
</tbody>
</table>

Please return to Lucy Ralton HCC MDT coordinator Viral Hepatitis Centre Level 7
RAH OPD Phone 8222 4248 Fax 8223 6329 or email lucy.ralton@health.sa.gov.au Updated 18 Jan 2012
FMC HCC MDT REFERRAL  Consultant:  Date:  /
/2012_______

Surname Name  Given Names:

DOB:  Sex  ur:

Address:

GP:  Home Ph:  Mobile Ph:

Aetiology of Liver disease:

Varices/portal hypertension:

Previous treatment:

Comorbidities:

Imaging type requested:  Location of imaging:

ECOG (Eastern Cooperative Oncology Group)  Performance status:

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Asymptomatic (Fully active)</td>
</tr>
<tr>
<td>1</td>
<td>Symptomatic but completely ambulatory</td>
</tr>
<tr>
<td>2</td>
<td>Symptomatic, &lt;50% bed rest, independent self care</td>
</tr>
<tr>
<td>3</td>
<td>Symptomatic, &gt;50% in bed but not bedbound</td>
</tr>
<tr>
<td>4</td>
<td>Bedbound- unable to self care</td>
</tr>
<tr>
<td>5</td>
<td>Death</td>
</tr>
</tbody>
</table>

Lab & date:

Hb:  Platelets:  INR:

Bilirubin:  Albumin:

Creatinine:  AFP:  CA 19.9 (if relevant):

Child Pugh Score:

<table>
<thead>
<tr>
<th>Score</th>
<th>Albumin</th>
<th>Bilirubin</th>
<th>INR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&gt;35</td>
<td>&lt;24</td>
<td>&lt;1.7</td>
</tr>
<tr>
<td>2</td>
<td>28-35</td>
<td>24-50</td>
<td>1.7-2.3</td>
</tr>
<tr>
<td>3</td>
<td>&lt;28</td>
<td>&gt;50</td>
<td>&gt;2.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;70</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>70-170</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;170</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please return to HCC MDT co-ordinator Tracy Galbraith; Phone 8204 5714, Fax 8204 6420 or email tracy.galbraith@health.sa.gov.au  (Updated 24 Jan 2012)
### Appendix 8 Psychosocial referral pathway

Before referring for psychosocial care please consider the following:

<table>
<thead>
<tr>
<th>Is the patient and/or family member experiencing an acute exacerbation of distress following a period of increased vulnerability?</th>
<th>Is the person experiencing chronic elevated distress that is impacting on pain or symptom control, normal functioning, and/or ability to complete cancer treatment?</th>
<th>Is the person’s primary presentation psychiatric in nature?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is distress directly related to:</td>
<td>Does the patient have a past history of mental health concerns or history of trauma (i.e. PTSD)?</td>
<td>Are there imminent risk issues? (e.g. suicidal plan/intent or aggression)</td>
</tr>
<tr>
<td>Sadness associated with loss of usual good health</td>
<td>Is the patient experiencing severe anxiety related to the medical condition (e.g. is hyper-vigilant, experiencing panic attacks, highly irritable)?</td>
<td>Does the person have a previous psychiatric history or currently receive psychiatric treatment?</td>
</tr>
<tr>
<td>Preoccupation with thoughts about illness and treatment</td>
<td>Do they appear to be depressed or reporting suicidal thoughts?</td>
<td>Is there evidence of a thought disorder or psychosis?</td>
</tr>
<tr>
<td>Worries about future?</td>
<td>Are they describing illness specific fears and phobias (i.e. needle phobia, hypochondriasis)?</td>
<td>Is the person non-compliant with treatment?</td>
</tr>
<tr>
<td>Worries about the impact the illness is having on their family?</td>
<td>Are they reporting issues with body image or sexuality?</td>
<td>Are there signs or symptoms of suspected delirium?</td>
</tr>
<tr>
<td>Relationship or family issues?</td>
<td>Are they concerned by chronic disruption of sleep, appetite and/or concentration?</td>
<td></td>
</tr>
<tr>
<td>Are there significant practical concerns? (e.g. financial stress, transport issues, power of attorney, end of life decisions, etc)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consider consultation or referral to the following disciplines:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social Work</th>
<th>Clinical Psychology</th>
<th>Psychiatric Referral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interventions may include:</td>
<td>Psychological intervention may include a combination of formal assessment, cognitive behavioural therapy, hypnotherapy, management suggestions, and other relevant therapeutic interventions.</td>
<td>Formal Psychiatric Assessment and Review</td>
</tr>
<tr>
<td>Supportive counselling for patient and their families</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Links with external psycho-social supports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support groups and/or individual counselling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family meetings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grief counselling</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Appendix 9  Plants and herbal remedies proven or suspected to be toxic to the liver

Crotalaria
Senecio
Heliotropium
Symphytum officinale (Comfrey, gordolobo yerba tea, maté tea)
Atractylis
Callilepis (Zulu remedy)
Glycyrrhizin
Teucreum chamaedrys (Germander)
Larrea (Chapparal, creosote bush, grease wood)
Cassia (Senna) chronic ingestion only
Chinese herbs (infrequent toxicity; responsible agent(s) not yet identified)
Jin Bu Huan
Pennyroyal oil (labitae)
T’u san-chi’I
Ma Huang
Dai-saiko-to (TJ-9) incl. scutellaria
Viscum (Mistletoe)
Scutellaria (Skullcap)
Valeriana (Valerian)
Sassafras
Teucrium polium
Mentha pulegium
Berberis vulgaris
Hedioma pulegioides
Azadirachta indica (margosa oil)
Chelidonium
Podophyllotoxin (bajiaolian)
Prostata (saw palmetto)
Oil of cloves (eugenol)
Venencapsan
Kombucha tea
Black cohosh
Gynura segetum
Herbalife products
Hydroxycut
Green tea (camelia sinensis)
18 references


3 ibid

4 Ibid


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8 Ibid


11 ibid

12 Ibid


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62 Tsiaousi ET et al. Malnutrition in end stage liver disease: Recommendations and nutritional support. Journal of Gastroenterology and Hepatology 2008; 23, 527-533
63 ibid
64 ibid
65 BAPEN. Malnutrition Universal Screening Tool. 2004
66 Griffith University Handbook of Nutrition and Dietetics, 2007
67 Henkel AS and Buchman AL. Nutritional support in patients with chronic liver disease. Nature Clinical Practice: Gastroenterology & Hepatology April 2006; 3(4) 202-209
68 ibid
70 Tsiaousi ET et al. Malnutrition in end stage liver disease: Recommendations and nutritional support. Journal of Gastroenterology and Hepatology 2008; 23, 527-533
71 Henkel AS and Buchman AL. Nutritional support in patients with chronic liver disease. Nature Clinical Practice: Gastroenterology & Hepatology April 2006; 3(4) 202-209
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74 Cancer Council Australia National Cancer Prevention Policy 2007-2009
75 ibid
76 Royal Australasian College of General Practitioners. Putting prevention into practice (the Green Book). 2nd ed RACGP Melbourne 2006
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86 ibid
293 ibid