

**POLICY, PROCEDURE & GUIDELINES FOR THE
THE MANAGEMENT OF CAROTID ARTERY
RUPTURE RELATED TO THE TERMINAL CARE
OF THE HEAD & NECK CANCER PATIENT**

Reference Number:	771/2007
Author / Manager Responsible:	Fiona MacKay & Carol Cook
Deadline for ratification: (Policy must be ratified within 6 months of review date)	January 2011
Review Date:	May 2012
Ratified by:	Operational Governance Committee
Date Ratified:	May 2009

Related Policies	
-------------------------	--

INDEX

Section	Page
Consultation and Ratification Checklist - - - -	3
1. Policy Statement - - - - -	4
2. Introduction - - - - -	5
3. Procedure - - - - -	5
Appendix 1 Midazolam - - - - -	8
Appendix 2 Information Pack to support the policy - -	10
Appendix 3 Helpful Contact names and numbers - -	25
Appendix 4 Flow diagram - - - - -	26
Consultation Checklist - - - - -	29

CONSULTATION AND RATIFICATION SCHEDULE

Name and Title of Individual	Date Consulted
Mr. John Waldron, Head & Neck Surgeon, Medical Director	01/12/08
Prof. Martin Birchall, Head & Neck Consultant	01/12/08
Mrs. Annette Jardine, ENT Surgeon	01/12/08
Mr. Robert Slack, ENT Surgeon	01/12/08
Mr. Richard Canter, ENT Surgeon	01/12/08
Dr Chris Higgs, Palliative Care Consultant	01/12/08
Dr Hugh Newman, Clinical Oncologist	01/12/08
Mr. Julian Hunt, Consultant Nurse	01/12/08

Name of Committee	Date of Committee
Medicines Advisory Group	2006
Operational Governance Committee	13/05/2009
Clinical Governance Committee	20/05/2009

1. POLICY STATEMENT FOR THE MANAGEMENT OF A PATIENT WITH CAROTID ARTERY RUPTURE RELATED TO ADVANCED MALIGNANCY IN THE HOSPITAL & COMMUNITY ENVIRONMENT

- 1.1 The following policy and procedures are written for the situation when a major bleed may be expected due to identified risk factors, signs and symptoms that can be found overleaf. **These are to be used only when it is clear that the patient is not to be resuscitated due to advanced, untreatable, malignancy.**
- 1.2 The goal of management of the event must be **to minimise anxiety, ease suffering and ensure death with dignity providing a calm, reassuring and caring atmosphere.**
- 1.3 These guidelines are written specifically for the care of patient for whom cure is no longer possible and for whom resuscitation is not appropriate. This decision with regards to resuscitation status is to be discussed fully with the patient and family within the head and neck cancer team.
- 1.4 This procedure can be carried out by any Health Care Professional appropriately trained in the administration of IV drugs.
- 1.5 **Midazolam** is a benzodiazepine which is an appropriate drug to use in providing sedation and thus ease of suffering. It has a rapid onset, a short duration of action and produces amnesia. Thus if this is a herald bleed and the patient recovers from this event, then it is hoped that the patient will have little memory of the event (Doyle et al, 2004; Forbes, 1997; Gagnon et al, 1998). (Please see appendix 1, for further information.)
- 1.6 It is important that there is immediate access to IV Midazolam. This will be kept in the Controlled Drug Cupboard with its location known to all staff.
- 1.7 There are rare situations where the risk of rupture is so great that it may be appropriate to have an ampoule of Midazolam (10mgs in 2mls) drawn up in advance. Where this is judged appropriate the syringe will need to be replaced with a freshly drawn up ampoule once per shift, or as necessary. The syringe will need to be clearly labeled with drug name, dose and date / time drawn up.

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 4 of 29	Review date: May 2012

2. INTRODUCTION

2.1 These guidelines have been written to assist health care professionals with a clear plan of action when a major haemorrhage is suspected in advance of the actual event of a carotid artery rupture. They have also been written to help health care professionals in assessing which patients may be most at risk.

3.0 PROCEDURE FOR MANAGEMENT OF CAROTID ARTERY RUPTURE IN HOSPITAL

3.1 PREPARATION FOR THE EVENT

3.1.1 A patient who is likely to suffer an expected large bleed from the carotid artery would be discussed at the next MDT meeting. An invitation to this meeting will be made to the ward nursing staff.

3.1.2. The Consultant in charge of the patient, accompanied by the Head & Neck Clinical Nurse Specialist (CNS) or Ward Nurse will break the news of the likely occurrence of a Carotid Artery Rupture (CAR) and its implications. The information should ensure that patients/relatives have a clear plan of care and are aware that **NO** resuscitation will take place; this must then be documented as per DNAR guidelines.

3.1.3 The Nurse in Charge should also be nominated to prepare all staff involved and be responsible for staff debriefing after the event. It may be appropriate to inform the Matron on duty.

3.1.4 Patients and their relatives may require further opportunities to discuss what was said at the initial meeting as they may not have taken in all that was said or may have further questions.

3.1.5 A list of helpful names and addresses will be found at the back of the guidelines.

3.2 THE EVENT

3.2.1 It is important that the following equipment is available in the event of a CAR, (ideally in close proximity to the patient but sensitively placed):-

- Call bell
- Suction
- Syringes (10ml) for cuff inflation on a tracheostomy tube (if appropriate)
- Bowl
- Gloves, Plastic apron, eye protector/face shield

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 5 of 29	Review date: May 2012

Dark coloured towels
Bedside locker with attached individual drug cabinet
Midazolam ampoules, syringes, needles and alcohol wipes
Patent IV access

3.2.2 Patients should be nursed in a side ward to avoid shock and distress to other patients and relatives where possible (Feber, 2000).

What to do:-

3.2.3 A trolley should be discreetly available in the room. It should contain dark coloured towels, gloves and protective clothing. These items should not be removed and it should be kept uncovered and uncluttered.

3.2.4 Above all, stay with the patient and call for assistance. Avoid panic. Talk gently and calmly to the patient and hold their hand. (Kane, 1983). Try to keep the patient in one place if possible, i.e. lay on the bed or in a chair. Calmly call for assistance from another member of staff. Remember that being calm will greatly reassure the relatives (Bildstein& Blendowski, 1997).

3.2.5 Be aware of family presence and needs. Decide beforehand with the family if they wish to stay with the patient, be respectful of their wishes. Ensure support is given to family and friends at this time. Also be aware of other patients and visitors, draw curtains and maintain the privacy of the patient as much as possible.

3.2.6 Apply towels around the bleeding site to absorb the blood loss. If a cuffed tracheostomy tube is insitu, inflate the cuff.

3.2.7 Apply gentle suctioning to mouth and tracheostomy site as necessary.

3.2.8. Administer Midazolam intravenously (IV). If there is no IV access then intramuscularly (IM) as second choice is appropriate. The dose should be given as 5mgs IV stat dose or 5-10mgs SC/ IM stat dose. (Smith, 1992; Pereira & Phan, 2004) The dose may then be titrated until the patient is fully sedated (Forbes, 1997). (Refer to the IV Monograph).

3.2.9. It is important to remember, however, that in the event of a massive, terminal bleed the patient may be unconscious within minutes and may die very quickly, even before the sedation has had a chance to work. Thus it is important to remember that whilst sedation is important, **never leave the patient alone**, and stay with them at all times.

Author : Fiona MacKay & Carol Cook Job title: Head & Neck CNS's	Date: May 2009 Version: 2
Page 6 of 29	Review date: May 2012

3.3 AFTER THE EVENT

Relatives and friends

3.3.1 Relatives and friends should be offered a follow-up meeting to discuss the event allowing a chance to debrief. They should also be offered bereavement counselling as appropriate.

Staff support

3.3.2 Staff will need much support after the event and may need to talk through the incident fully with the Consultant in charge of the patient or the Head & Neck CNS. All staff should be offered support, not just those immediately involved, but all in the vicinity of the incident. Other visitors may also be de-briefed.

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 7 of 29	Review date: May 2012

APPENDIX 1 MIDAZOLAM

List 1 – Special circumstances*
List 2 - Critical Care
List 5 - Oncology

Midazolam

Special Instructions	Bolus doses to be given by Doctors and Nurses under the supervision of an anaesthetist in ICU only. List 1 - For patients where a plan regarding carotid artery blowout is documented* List 2 –Critical Care by infusion only. List 5 – Oncology by bolus only for bone marrow biopsy according to a protocol.
Presentation	10mg in 2ml, 5mg in 5ml ampoules.
Reconstitution	Already in solution.
Administration	Slow intravenous injection, continuous infusion.
Infusion Fluid	Glucose 5%, sodium chloride 0.9%.
Method	Slow intravenous injection: For sedation, give 2mg over a minimum of 30 seconds (usually over 2 minutes). If sedation is not adequate after 2 minutes, give incremental doses of 500micrograms-1mg. Continuous infusion: Following an initial loading dose over 5 minutes, dilute 50mg to 50ml with compatible infusion fluid and infuse according to requirements.
Infusion pump	Via syringe pump.
Comments	Resuscitation equipment should always be available when Midazolam is used. A second person whom is fully trained in resuscitation should be present. Respiratory depression and arrest have occurred when doses are given too rapidly. Extravasation risk.

For Patients where carotid artery blowout is a high probability and a patient is for palliative care. A documented management plan is required.

Administration Rapid bolus intravenous injection

Method **Fast intravenous (bolus) injection:** For anxiolysis and sedation where a catastrophic bleed occurs, give 5mg as a fast bolus. (If no IV access is available give 5 – 10 mg as a Subcutaneous or intramuscular injection. Further doses may be given until the patient is fully sedated. After the initial dose it may be appropriate to give more slowly (depending on the effect of the first dose).

Comments

* Reference should be made to the “Policy, Procedure & Guidelines For The Management Of Carotid Artery Rupture Related To The Terminal Care Of The Head & Neck Cancer Patient.” For Midazolam to be used in the way described in this section, the policy above must be strictly followed.

It is important to remember that whilst sedation is important, **never leave the patient alone**, and stay with them at all times.

Extravasation risk.

It is the individual practitioner’s responsibility to ensure they are competent to give the above drug.

This monograph should be used in conjunction with the package insert and advice from your clinical pharmacist/pharmacy department.

Author : Fiona MacKay & Carol Cook Job title: Head & Neck CNS's	Date: May 2009 Version: 2
Page 9 of 29	Review date: May 2012

APPENDIX 2 INFORMATION PACK TO SUPPORT THE POLICY

1. RISK FACTORS

1.1 To arm the HCP with the knowledge and understanding of the risk factors will enable them to predict which patient is most at risk, and plan for the event carefully:

- 1 Surgery
- 2 Radiotherapy
- 3 Post Operative Healing Problems
- 4 Pharyngocutaneous Fistula
- 5 Fungating Tumour
- 6 Systemic Factors.

1.2 Surgery

1.2.1 Any patient having undergone head and neck surgery to sites local to the carotid artery is a potential candidate for a major bleed (Freeman et al, 2004; Cohen & Rad, 2002; Casey, 1988).

1.2.2 However, life threatening haemorrhage is a well-recognized and dreaded early complication following a radical neck dissection (Rodriguez et al, 2001). A radical neck dissection removes the sternomastoid muscle, internal jugular vein and often involves sacrifice of the accessory nerve. This is done in an effort to rid the neck of lymph nodes that may contain metastatic tumour cells. Skin flaps in the neck are raised to expose deep cervical fascia. Fascia is also dissected from the internal jugular vein, vagus nerve and carotid artery. Surgical interventions of this nature will increase the risk of CAR occurring especially if the adventitial arterial wall is exposed and removed due to tumour infiltration, and if there is subsequent wound healing complications and infection (Nieto et al, 1980). This is especially so if the area has been previously irradiated (Cohen & Rad, 2004).

1.2.3 Surgical interventions to the head and neck pose other factors that decrease healing of the area, such as oedema due to removal of lymph tissue and increased venous drainage (Johantgen, 1998).

1.3 Radiotherapy

1.3.1 Previous neck irradiation is the **most common** factor leading to CAR (Rodriguez et al, 2001; Kane, 1983; Shumrick, 1973; Nieto et al; Swain et al, 1974). Virtually 100% of CAR occurs within an irradiated field, especially if the treatment is delivered within 2 months of surgery (Nieto et al, 1980). Irradiation has been associated with a sevenfold increase in the risk of CAR in patients with head and neck cancer (Cohen & Rad, 2004).

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 10 of 29	Review date: May 2012

1.3.2 Radiotherapy has been shown to reduce the flow in the vaso vasorum and it is estimated that the blood flow to the carotid wall is reduced by 50 % after a course of 3000 rad radiotherapy course (Smith, 1961). (This is equivalent to 30 grays). Radiotherapy has also been implicated because it causes adventitial fibrosis, premature atherosclerosis, weakening of the arterial wall, sub endothelial vacuolization and oedema, and fragmentation of the tunica media elastic fibres. (Huvos et al, 1973) These factors will subsequently render the patient at a higher risk of infection and limit wound healing to an operative area.

1.4 Postoperative healing problems

1.4.1 Impaired wound healing can occur following surgery to the neck such as a radical neck dissection. This may be due to previous radiotherapy, infection and excision of the lymphatic chains leading to lymphoedema (Feber, 2000).

1.4.2 Wound healing is affected by many factors. Deficits in circulation, oxygen, nutrients can all affect wound healing. However, if wound breakdown occurs then, this can lead to disastrous effects. The carotid artery can be exposed, flap necrosis can occur, which allows the invasion of bacteria leading to possible sepsis and desiccation of the adventitia (Nieto, 1980; Cohen & Rad, 2004; Shumrick, 1973; Lesarge, 1986; Swain et al 1974).

1.5 Pharyngocutaneous fistula

1.5.1 Pharyngocutaneous fistula is a result of wound breakdown following surgery and is recognised as an important causative factor in CAR. (Warren et al, 2002; Feber, 2000; Nieto et al, 1980) The fistula results in the adventitia being bathed in saliva, which is bacteria laden and damaging to the outer lining of the arterial wall (Nieto et al, 1980; Swain et al, 1974; Casey, 1988; Maran, 1989). Oral sepsis can also encourage postoperative wound infection (Nieto, 1980). This not only increases the incidence of infections, but increases the seriousness of these when they occur (Kornblut & Shumrick, 1971).

1.6 Fungating tumour invading the artery.

1.6.1 Direct infiltration of the tumour can result in destruction of the arterial wall. A fungating wound will have necrosis and often infected tissue, which only exacerbates the vulnerability of the arterial wall.

1.7 Systemic factors.

1.7.1 General systemic factors noted below, may also increase risk of CAR and must also be considered. Those reported in the literature include suggestions from Casey, 1988 and Schiech, 2000:

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 11 of 29	Review date: May 2012

- a) Over 50 years of age
- b) 10-15% loss of body weight
- c) diabetes mellitus and immune deficiencies (Johantgen, 1998)
- d) Generalised atherosclerosis. (Neito et al, 1980; Shumrick, 1973
Lesarge, 1986, Schiech, 2000)
- e) Malnourishment, (Okamura et al, 2002).

2. SIGNS & SYMPTOMS

- 2.1 There are several signs and symptoms that should prepare the Health professional for an imminent major bleed, although it must be remembered that there may be no warning at all in some cases and an assessment of risk factors must always be taken into consideration in an attempt to predict those patients most likely to be at risk.
- 2.2 'Sentinel bleeds' or 'herald bleeds' can present as minor bleeding from wound, flap site, tracheostomy or mouth (Lovel, 2000; Forbes, 1997; Fortunato & Ridge, 1995; Kane, 1988). As the process of erosion is gradual, impending rupture of the artery may be recognised by sentinel bleeding (Macmillan & Struthers 1987). Even seemingly trivial bleeding may herald CAR. (Fortunato & Ridge, 1995). This is caused by a small rupture of the intima at the site of the defect of the tunica which seals temporarily. (Niето et al, 1980)
- 2.3 'Pulsations' from artery or tracheostomy or flapsite (Kane, 1988; Casey, 1988).
- 2.4 Sternal or high epigastric pain several hours before rupture (Parsons, 1995).
- 2.5 'Ballooning' of an artery (Luo et al, 2002; Schiech, 2000; Casey, 1988).
- 2.6 There may be other indicators that a patient is at high risk of a CAR. This maybe through direct observation by the surgeon that tumour is infiltrating the arterial wall at the time of surgery. There may also be indications through scanning of the head and neck area, for example with MRI scans. The Multi-disciplinary head and neck cancer meeting can be an ideal arena to identify those patients who are at risk.

3. INFORMATION

- 3.1 When a carotid artery ruptures a major haemorrhage occurs (Casey, 1988). This is often known as a 'carotid blow-out'. Studies show that this can occur in 3-4% of all patients undergoing Head and Neck Surgery (Morrissey, 1997; Koch, 1993; Lesarge, 1986).

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 12 of 29	Review date: May 2012

- 3.2 In advanced disease this can account for 11.6% of head and neck cancer deaths, also it has been found that 20% of patients with a recurrent cancer will suffer a catastrophic bleed (Shedd et al, 1980).
- 3.3 According to Smith (1992), haemorrhage occurs in patients with advanced cancer in some 10% of cases.
- 3.4 Haemorrhage may occur either externally from the neck, internally from within the oropharynx, or directly into the airway or tracheostomy. Hypovolaemic shock is often the cause of death (Kane, 1983); however asphyxiation of blood may also be a contributory factor. CAR can be dramatic and some preparation for the event is essential (Feber, 2000; Gagnon et al, 1998; Kane 1983). This event needs immediate action and can be traumatic for all those involved. CAR remains one of the most feared complications of head and neck cancer and its treatment (Cohen and Rad, 2004; Lovel, 2000).

4. ANATOMY

- 4.1 The common carotid artery arises from the aorta on the left and from the brachio-cephalic artery on the right and they supply almost all of the blood to the head and neck. They run upwards on either side of the trachea and divide at the level of the hyoid bone into the internal and external carotids. (See diagram 1). It is at this bifurcation that there is an area of increased risk of damage due to the natural thinness of the arterial wall (Shumrick, 1983; Casey, 1988).

5. MECHANISM OF EROSION

- 5.1 There are three distinct layers to an artery: advential, medial and intimal layer (See diagram 2). The outermost layer (adventitia) protects the artery and is nourished by the vasovasorum which provides 80 % of their nutrition to the arterial wall, through a system of small vessels (Schiech, 2000). When this essential nourishment is interrupted, (through exposure to the atmosphere, as during skin necrosis, surgical procedures and sloughing), destruction of the arterial wall begins. This usually occurs over 6 – 10 days (Lesarge 1986; Kane, 1983).
- 5.2 This process begins with damage and loss of the adventitial layer and the formation of an eschar. The eschar eventually separates from the wound by a process known as sloughing. The underlying medial layer is then the exposed layer and thus the process is repeated until the intimal layer thins to a point where the artery weakens and erupts causing massive haemorrhage.

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 13 of 29	Review date: May 2012

6. USE OF DIAMORPHINE

6.1 Diamorphine is **not** recommended as a first line medication in this event for the following reasons:

6.1.1 From the supporting literature and anecdotal accounts of witnesses to this event, there are no reports of pain. Therefore an anxiolytic, such as Midazolam is the drug of choice, which if used correctly should sedate the patient, without the need for opioids. Benzodiazepines also have an amnesic effect.

6.1.2 Due to the strict protocols on the storing, drawing up of, and administering of, controlled drugs, there may be unavoidable delays when administering the diamorphine. By the time the patient receives the diamorphine it may be too late and the patient may have already died. This may also increase the chance of the patient being left alone.

6.1.3 There are connotations with euthanasia and ethical dilemmas raised by the administering of an opioid if the patient is in no pain.

6.2 Therefore, it is not recommended in this event EXCEPT for the following reasons:

Should the patient have a bleed that is not likely to result in immediate death and complain of PAIN and/or BREATHLESSNESS, then these would be the only indications to give diamorphine

Should the patient be on regular opioids, the dose given should be equivalent to their usual four hourly dose of opioid. In an opioid naïve patient, 2.5mg to 5mg of diamorphine could be given subcutaneously.

7. MANAGEMENT OF NON-TERMINAL BLEEDING

7.1 There are occasions when even following significant bleeding the patient does not die immediately or indeed suffers a bleed that may be a herald bleed for an impending major and terminal event in the near future. Management of the bleeding and treatment will once again depend upon decisions made between the patient, family and head and neck team/palliative care teams. If the patient's life expectancy and overall quality of life warrants it, then management of acute bleeding episode consists of general resuscitative measures, such as volume and fluid replacement, and specific measures to stop the bleeding. However, if the patient's goals are palliative, then management may include measures to stop bleeding without full resuscitative measures. Comfort measures only may be most appropriate for end-stage patients. (Pereira & Phan, 2004).

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 14 of 29	Review date: May 2012

7.2 Patients and their families will undoubtedly have been extremely frightened and distressed by this experience and may need to talk through the experience. This may have been an event which had been unpredicted and which they were not prepared for, in which case it may be possible to explain how the experience may be helped in the future with better preparation. They may be comforted by the knowledge that sedation will be available and that they will be supported both at home and in a hospital/hospice setting.

8. PREPARATION FOR THE PATIENT & FAMILY

8.1 Once a patient has been identified as having a 'high risk' of developing an imminent CAR, a clear plan of action should occur. The health professionals involved should ensure that they come together as a team with the patient and family, fully prepared to discuss how each individual patient should be cared for. The team should assess both the patient's and family's knowledge of the prognosis and the extent of the disease. They should establish what the patient's desires are in relation to treatment, and whether they still wish to continue with aggressive attempts to prolong life or supportive care (Kane, 1983).

9. WHETHER, WHEN & HOW TO TELL THE PATIENT & FAMILY

9.1 There is no literature to guide us on whether, when and how to tell the patient and family in relation to this event and this is an area that nursing research urgently needs to address (Feber, 2000).

9.2 From the authors of the literature, there does seem to be an agreement that an open and honest approach is the best way of helping the patient and family (Feber, 2000; Bildstein & Blendowski, 1997; Smith, 1992; Forbes, 1997; Kane, 1983; Johantgen, 1998).

9.3 A major haemorrhage will be an extremely frightening event for the patient and family. For the patient and family who are unprepared, this will be a horrifying experience and the shock of the death can contribute to complex bereavement issues (Doyle et al, 2004; Dickenson & Johnson, 1993).

9.4 It may help greatly if the patient and family enter into discussion with those members of the team who are obviously knowledgeable about the event, but whom are also well known to the patient and with whom they have a trusting and open rapport. Poor communication about the dying process can remain a barrier to providing adequate care at the end of a patient's life, and increases the sense of abandonment and isolation so often experienced by patients and families (Yarbro et al, 2000).

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 15 of 29	Review date: May 2012

- 9.5 When to warn a patient and family that CAR might occur is difficult to judge. For some patients and families, information given too early about a possible fatal bleed occurring might cause a period of anticipation that is interminable and cause prolonged anxiety, whereas information given too late may not give enough time to absorb the information and prepare for the event (Kane, 1983). For some patients, they may have preferred not to have been made aware at all. It must be remembered that, whilst patients and families have a 'right to know', there is also a corresponding 'right not to know' and that they should have the option of choosing how much information they want to be given.
- 9.6 Many patients and families will have contemplated how the death will occur and in most cases hemorrhage may already be an unexpressed fear (Feber, 2000) Contemplating the truth, knowing what to expect, what to do, and how distress can be relieved can be helpful to the patient and family (Kane, 1983). It may also help the patient and family to know that, in the event of a massive carotid rupture there should be little pain and that death is usually very quick (Cohen & Rad, 2004; Smith, 1992).
- 9.7 If children are involved, it is important to assess their needs. Offer support and a chance for discussion at a level appropriate to their cognitive development that will aid their level of understanding of the situation. Involvement of appropriate child specialists and social workers would be highly recommended. Local and national support and guidance is available. (See appendix 1 for details).

10. CARING FOR THE PATIENT AT HOME

- 10.1 Many patients may wish to go home and may not wish to stay in hospital or the hospice, 'waiting to bleed'. The approach of death can evoke feelings of loss in a dying patient (Bourne et al, 1999). Loss of control may be the most overwhelming and distressing feeling, which is often further intensified by hospitalization. Being at home may give the patient and family privacy, control over their surroundings, and may help the patient to retain their own identity. The team should discuss a management plan (see guidelines) with the patient and family and liaise directly with the primary healthcare team (PHT). Understandably, the PHT may be anxious about how to manage the event at home. The use of the guidelines can help to create a clear plan of care which may do much to reduce the anxiety felt. Support should be given to the community teams and district nurses from Head and Neck nurse specialists and community palliative care teams who may offer joint visits to the patient at home.
- 10.2 However, despite all this preparation and support, many patients and families may feel they would rather be in a hospital /hospice setting and every effort should be made to meet these wishes.

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 16 of 29	Review date: May 2012

11. ANTICIPATORY GRIEF & BEREAVEMENT SUPPORT FOLLOWING THE EVENT

11.1 When the patient and family are informed of disease progression and of the likelihood of imminent death through a CAR, grief is initiated as they anticipate eventual death. Patients themselves may experience a huge range of emotions to the realization that their illness is terminal and that death may be imminent. The patient may display a range of emotions from denial, anger, emotional distress, depression, hopelessness, anxiety, thoughts of suicide, through to acceptance and feelings of calm (Doyle et al, 2004). Helping patients and families at this time can be difficult and often requires time, sensitivity and great care. The palliative care teams, whether in the hospital or community setting, should be involved in the patients' care.

12. FAMILY SUPPORT

12.1 Anticipatory grief generally draws the supportive family together as they grapple with the knowledge of impending death of a loved one. For some, however, difficulties can emerge as impaired coping is displayed through avoidance of the patient, denial, anger and intense distress. The team can usefully help the family by encouraging them to openly share their feelings and say goodbye to their spouse, family member or friend. (Doyle et al, 2004).

13. BEREAVEMENT SUPPORT

13.1 For the family of the patient who suffered CAR, structured bereavement support should be made available. Families may find it helpful to meet and talk through any fears, anxieties and distress felt. Palliative care teams are ideally placed to deliver this support and may recognize those families at increased risk of complicated grief and plan interventions in an endeavor to help the process of mourning (Doyle et al, 2004).

14. STAFF SUPPORT

14.1 Preparation of staff for this event is of paramount importance if the event is to be managed well. For staff who are unprepared, this event may evoke such panic and distress that they are of little assistance to the patient and family and will have suffered unnecessary distress themselves. It is hoped that these guidelines will give the carers involved some sense of 'what to do' in the event, which may help to reduce panic. Staff should be prepared for the amount of bleeding that may be witnessed and junior/inexperienced staff may need to be given extra support. The palliative care team/head and neck CNS may be of assistance in preparing teams for this event.

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 17 of 29	Review date: May 2012

14.2 The team who feels that they managed the care of the patient well will have a sense of competence which can be a common coping mechanism for professionals involved in the care of the patient who has had a CAR (Vachon, 1987). A sense of team philosophy, and support for each other has also been identified as an important coping mechanism especially for preventing 'burnout' (Beck-Friis et al, 1993). There should be opportunities for professionals involved to meet either formally or informally following a traumatic event such as this. Experience shows that it is extremely important to de-brief and have time to reflect. There may be personnel such as staff counsellors/psychologists who may be approached to facilitate this.

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 18 of 29	Review date: May 2012

Diagram 1: Showing main arteries in the head and neck

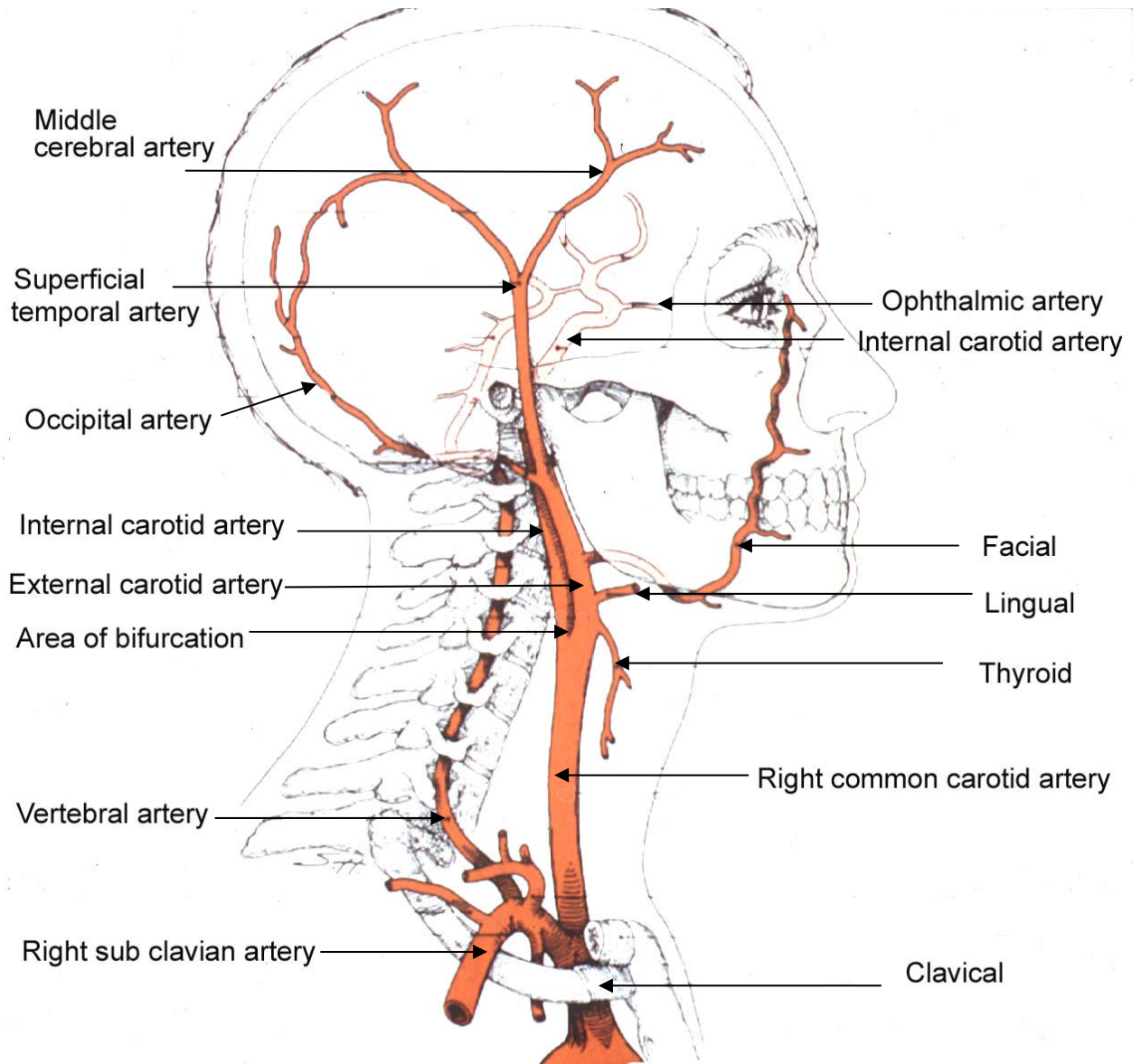
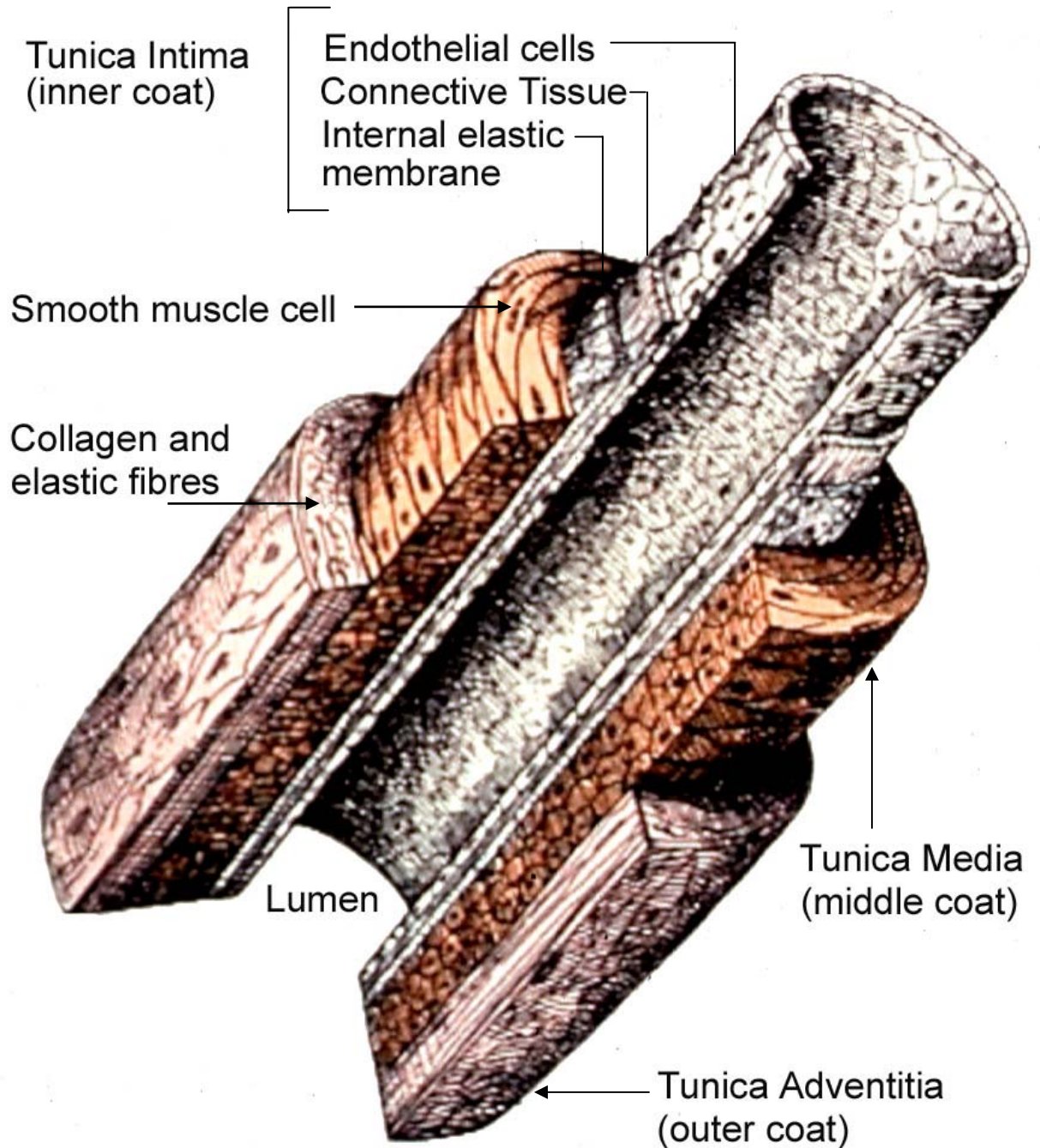


Diagram 2: The three distinct layers to an artery



15. REFERENCE DOCUMENTS

Beck-Friis, B, Strang, P. Sjoden, P.O. (1993) Caring for severely ill cancer patients: a comparison of working conditions in hospital-based care and in hospital oncology settings. *Oncology Nursing Forum* 16, 555-60

Bildstein, CA. Blendowski, C. (1997) *Head and Neck malignancies in Cancer Nursing Principles and practice*, 4th edition. Jones and Bartlett, London

Bourne, V. Frogge, M.H. (1999) Grief, in Yarbro CH, Frogge MH, Goodman (eds) *Cancer symptom management (ed 2)*. Sudbury, MA Jones and Bartlett, 618-626

Casey, D. (1988) 'Carotid "Blow-out"'. *Nursing Standard* 2 (47): 30

Chen, J. Rad, I. (2004) Contemporary management of carotid blowout. *Current opinion in otolaryngology and head and neck surgery*, 12: 110-115

Cohen, J. Rad, I. (2004) Contemporary management of carotid blowout, *Current opinion in otolaryngology & Head and Neck Surgery*, 12: 110-115

Coleman, J.J (1985) Treatment of the ruptured or exposed carotid artery resection. *Otolaryngology*, 78:262-267

Chaloupka, J.C. Putaman, C.M. Son, Y.H. (1996) Endovascular therapy for the carotid blow-out syndrome. *American journal of neuroradiology*; 17: 843-852

Dickenson, D. Johnson, M. (1993) *Death, dying and Bereavement*, Sage publications, London

Doyle, D. Hanks, G. Cherny, N. Calman, K. (2004) *Oxford Textbook of Palliative Medicine*, third edition, Oxford University Press, Oxford.

Feber, T. (2000) *Head and Neck Oncology Nursing*. Whurr Publishers Ltd, London Chapter 2.8, 245 – 252

Forbes, K. (1997) Palliative care in head and neck cancer. *Clinical Otolaryngology* 22:117-22

Fortunato, L. Ridge, J.A. (1995) Surgical palliation of head and neck cancer. *Current problems in cancer* 19(3):153-65

Gagnon, B. Mancini, I. Pereira, J. Bruera, E. (1998) 'Palliative Management of Bleeding Events in Advanced Cancer Patients'. *Journal of Palliative Care*. 14:4:50-54

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 21 of 29	Review date: May 2012

Heller, K.S. Strong, E.W. (1979) Carotid arterial haemorrhage after radical head and neck surgery. *American Journal of Surgery* 138:607-610

Huvos, A.G. Leaming, R.H. Moore, O.S. (1973) Clinicopathologic study of resected carotid artery: analysis of 64 cases. *American journal of surgery*, 126:570-574

Lesarge, C. (1986) 'Carotid artery rupture'. Prediction, prevention and preparation. *Cancer Nursing*, 9 (1) 1-7

Lovel, T. (2000) Palliative care and head and neck cancer. Editorial, *British Journal of Oral and Maxillofacial Surgery*, 38, 253-254

Luo, C.B. Chang, F.C. Mu-Huo Teng, M. Chi-Chang Chen, C. Feng Lirng, J. Cheng, Y. (2003) Endovascular treatment of the carotid artery rupture with massive haemorrhage, *Journal of Chinese medical Association*, 66, 140-147

Johantgen, M.A. (1998) Carotid artery rupture in Advanced and Critical Oncology Nursing. Managing primary complications, W.B. Saunders Company, Pennsylvania

Kaye, P. (1996) *Breaking bad news*. Northampton: EPL publications. London.

Kane, K. K. (1983) 'Carotid artery rupture on Advanced Head and Neck Cancer Patients', *Oncology Nursing Forum* Vol 10, No.1, 14-18

Koch, W.M. (1993) Complications of surgery to the neck. In complications of head and neck surgery. Edited by Eisele D. St Louis: Mosby; 393-413

Kornblut. A, Shumrick, D. (1971) complications of head and neck surgery, *Otolaryngology*, 94, 246

Macmillan, K. Stuthers, C. (1987) Algorithm for the Emergency Nursing Management of spontaneous Carotid Artery Rupture. *Canadian Critical Care Nursing Journal*- March/April, 20-21

Maran, A.G.D. Amin M.A. Wilson, J.A. (1989) Radical neck dissection: a 19 year experience. *The Journal of Laryngology and Otology*, August, vol.103 pp 760-764

Martinez, S.A. Oller, D.W. Gee, W. deFries, H.O. (1975) Elective carotid artery resection. *Archives of Otolaryngology* 101:744-747

McCready. R.A. Hyde, G.L. Bivins, B.A. Mattingly, S.S, Griffen, W.O (1983) Radiation induced arterial injuries. *Surgery*, 93: 306-612

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 22 of 29	Review date: May 2012

- Morrissey, D.D., Andersen, P.E. Nesbit, G.M. Barnwell, S.L. Events, E.C. Cohen, J.I. (1997) Endovascular management of haemorrhage in patients with head and neck cancer. Archives of otolaryngology, head and neck surgery; 123:15-19
- Nieto, C.S. Solano, J.M.E, Martinez, C.B. Martin, E.F. Colunga, J.C.M. Garcia, A.A. (1980) The carotid artery in head and neck oncology, Clinical Otolaryngology, 5, 403-417
- Okamura, Ho. Kamiyama, R. Takiguchi,Y. (2001) Histopathological Examination of Ruptured Carotid Artery after Irradiation, case Report, ORL; 64: 226-228
- Parsons, R. (1995) Practice Guidelines, carotid Artery rupture, Fall, vol 13, no.4, 30-31
- Pereira, J. Phan, T. 2004) Management of bleeding in patients with advanced cancer. The Oncologist; 9: 561-570
- Rodriguez, F. Carmeci, C. Dalman, R.L. Lee, A. (2001) Spontaneous Late Carotid-Cutaneous Fistula following radical neck dissection- a case report. Vascular surgery, vol 35, (5)
- Schiech, L. (2000) Carotid artery rupture. Clinical Journal of Oncology Nursing, vol 4, pp93-94
- Shedd, D.P. Shedd, C. (1980) Problems of terminal head and neck cancer patients, Head and Neck Surgery, 2:476-482
- Shumrick, D.A. (1973) 'Carotid artery rupture,' Laryngoscope, 83(7): 1051-61
- Smith, A. M. (1992) Emergencies in Palliative Care, Annals Academy of Medicine, vol 23, no2, 186-190
- Smith, D. (1961) Effects of gamma radiation on isolated surviving arteries and their vasovasorum. Journal of physiology 201, 901
- Shwartz, S. L. Barr, N.J. (1979) 'Carotid Castrophe'. American Journal of Nursing. 79(9): 1566-7
- Swain, R. E. et al (1974) An experimental Analysis of causative factors and protective methods in Carotid Artery Rupture. Arch Otolaryngology vol 99, April, 235-241
- Vachon, M. L. S. (1995) Staff stress in hospice/palliative care: a review. Palliative Medicine 9, 91-122

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 23 of 29	Review date: May 2012

Yarbro C.H. Hansen-Frogge. Goodman, M. Groewald, S.L. (2000) Cancer Nursing, principles and practice, fifth edition Jones and Bartlett, London

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 24 of 29	Review date: May 2012

APPENDIX 3 HELPFUL CONTACT NAMES AND NUMBERS

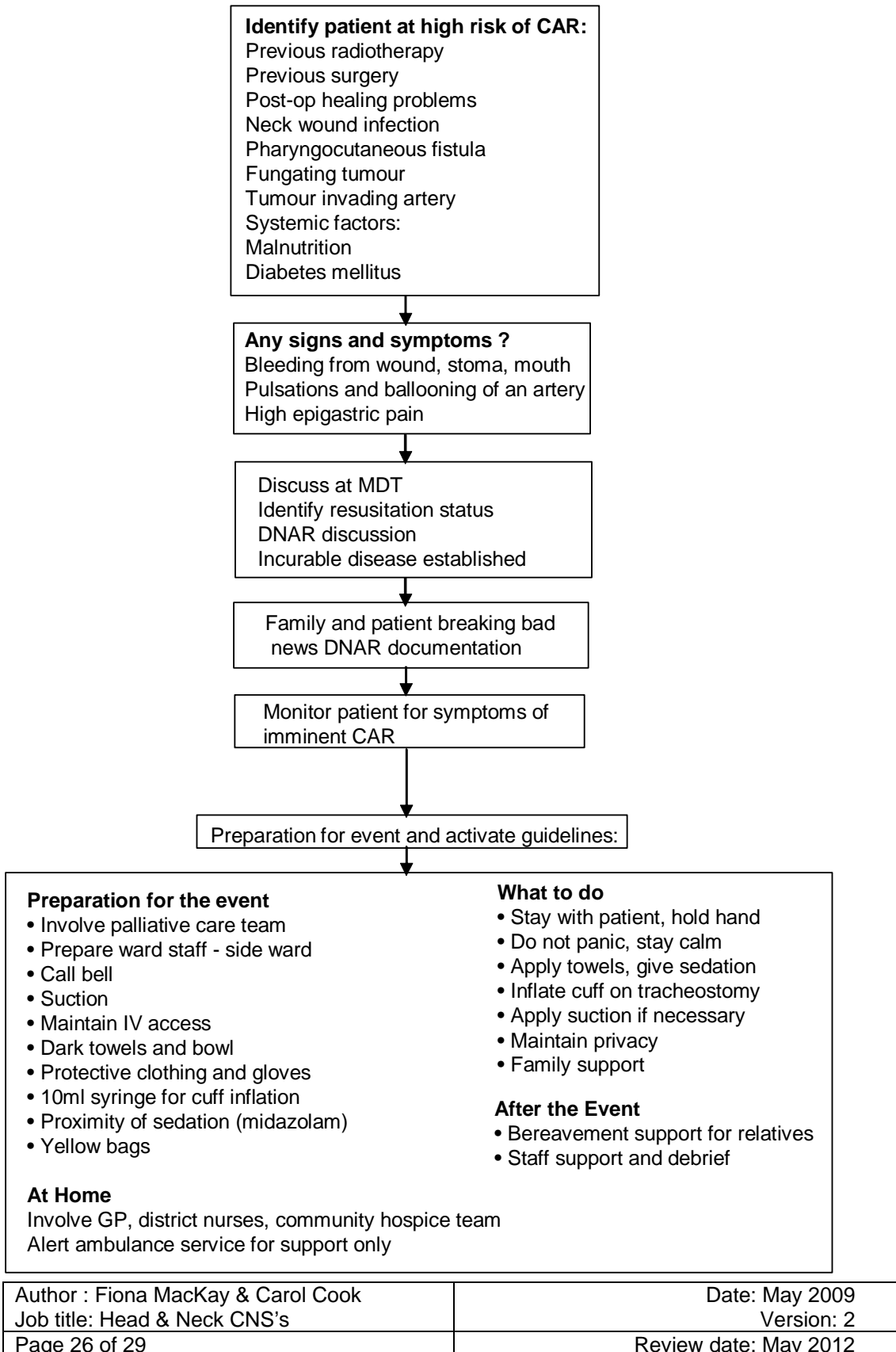
Helpful local and national contact names and telephone numbers:

Macmillan Head & Neck Specialist Nurse	01225 825684
RUH Palliative Care Team	01225 825567
Dorothy House Hospice	01225 722988
Critical Care Outreach	Bleep 7719
CRUSE	0117 9243882
The Bristol Support Group for the recently bereaved	0117 9652708
Marie Curie Agency	01793 484802

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 25 of 29	Review date: May 2012

APPENDIX 4 FLOW DIAGRAM

Flow diagram for management of Carotid Artery Rupture (CAR) in a terminal event within a home and hospice/hospital setting.



Acknowledgements

The CAR guidelines were originally compiled with assistance from varied areas of care for local use in 1999. Following this, they were sent out to members of BAHNON (British Association of Head and Neck Nurses) where the feedback and suggestions from members were incorporated into the guidelines. They were then available and adaptable for own local use on the BAHNON website. (www.bahnon.org.uk)

This policy has been adapted for use in the RUH NHS Trust from those originally written by Elizabeth Potter Head & Neck CNS, Southmead Hospital, Bristol.

Author : Fiona MacKay & Carol Cook	Date: May 2009
Job title: Head & Neck CNS's	Version: 2
Page 27 of 29	Review date: May 2012

CONSULTATION CHECKLIST

Author; please attach this to each copy of the policy being sent to a meeting for comments.

Dear Chairman, please would you review this policy at your committee and return any amendments / comments to _____ by ____ / ____ / ____

Title of meeting Clinical Governance Committee
Date of meeting 20 May 2009
Name of policy Management of Carotid Artery Rupture
Name of author Fiona MacKay & Carol Cook

	Yes	No	N/A
Are there any elements of this policy which present operational issues that require further discussion? If yes, please provide a contact name for the author. _____		x	
Is the policy referenced?	x		
Does the policy include a training plan?		x	
If you are the appropriate forum, have the necessary resources been agreed to implement this policy?	x		
Is there a plan for policy implementation?			x
Does your meeting recommend further consultation with groups or staff other than listed at the front of the policy?		x	
Other comments from meeting.			x

Policy accepted without further comment. (Please circle)

Yes

Policy needs further amendment. (Please circle)

No

Name of Chair: Peter Tomkins

Signature: _____

Date: ____ / ____ / ____

For Human Resources Policies only

Name of Staff Side _____

Signature

Date / /

Author : Fiona MacKay & Carol Cook

Date: May 2009

Job title: Head & Neck CNS's

Version: 2

Page 29 of 29

Review date: May 2012