


Guideline for the Management of Hypertensive Disorders in Pregnancy (Excluding Severe Pre-eclampsia and eclampsia)		Barnsley Hospital  NHS Foundation Trust	
Author:	Guideline group	Reference number:	
Issue Number 1	Maternity	Authorisation date:	05/12/11
		Reviewed:	05/12/11
		Next review date:	05/12/14

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Introduction

Rationale

The purpose of this guideline is to ensure:

- Women with pre-existing or pregnancy induced hypertension receive appropriate care and management
- Women who develop severe hypertension, severe pre – eclampsia and eclampsia receive appropriate care and management including critical care
- Women with a history of hypertension in pregnancy are aware of the risks and consequences for care in future pregnancies

Scope

This guidance applies to staff who care for pregnant and newly delivered women at BHNFT

Throughout the guideline where an Obstetric opinion/decision regarding care is required it is assumed that the most appropriate senior Obstetrician will be consulted

Principles

This guidance is evidence based and follows best practice recommendations - NICE Clinical Guideline 107 – Hypertension in Pregnancy (2010)

Background

Hypertensive disorders during pregnancy carry risks for the woman and are among the leading causes of maternal death in the UK

Hypertensive disorders also carry a risk for the baby in terms of higher rates of perinatal mortality, preterm labour and low birth rate

Most hypertensive disorders that occur during pregnancy develop for the first time in the second half of pregnancy

New hypertension can occur without significant proteinuria (gestational hypertension) or with significant proteinuria (pre-eclampsia)

Hypertensive disorders during pregnancy can occur in women with chronic hypertension (pre-existing hypertension)

Guideline Outline

(Section 1) Reducing the risk of hypertensive disorders in pregnancy

Antenatal care and fetal monitoring for women with a moderate or high risk of pre-eclampsia

Table of Risk Factors

Moderate Risk Factors	High Risk Factors
<ul style="list-style-type: none">• First Pregnancy• Age \geq 40 years• Pregnancy interval $>$ 10 years• BMI \geq 35 at first visit• Family history of pre-eclampsia• Multiple pregnancy	<ul style="list-style-type: none">• Hypertensive disease during previous pregnancy• Chronic kidney disease• Autoimmune disease such a SLE or antiphospholipid syndrome• Type 1 or type 2 diabetes• Chronic hypertension

If the woman has 2 or more moderate risk factors or 1 or more high risk factors she should be advised to take Aspirin 75mgs daily from 12 weeks until at least 36 completed weeks of pregnancy

The prescription of Aspirin should be recorded on the woman's care plan and in the letter to the GP

In the woman complains of abnormal fetal activity a CTG should be carried out if feasible (gestation related)

If the woman has a history of previous:

- Severe eclampsia
- Pre-eclampsia requiring delivery before 34 weeks gestation
- Pre-eclampsia where the baby's birth weight was $<$ the 10th Centile
- Intrauterine death
- Placental abruption

She should have an ultra sound scan for fetal growth, amniotic fluid volume, and Doppler at 28-30 weeks gestation or 2 weeks before the previous gestational age of the onset of hypertensive disorder if this was less than 28 weeks

The ultra sound scan should be repeated after 4 weeks

Maternal Advice

Women should be advised to seek help from a Healthcare Professional if they experience any of the following:

- Severe headache
- Visual disturbances such as blurred vision or flashing before eyes
- Severe pain just below the ribs
- Vomiting
- Sudden swelling of face, hands or feet

Offer advice on rest, exercise and work in accordance with NICE clinical guidance 62, Antenatal care

(Section 2) Chronic Hypertension

Pre-pregnancy advice

Women should be advised to discuss their antihypertensive treatment (ACE inhibitors, ARB's or chlorothiazide diuretics) with the practitioner responsible for managing their hypertensive state before pregnancy as:

- There is an increased risk of congenital abnormalities if ACE inhibitors or ARB's are taken in pregnancy
- There is a possible risk of congenital abnormality or neonatal complications if chlorothiazide diuretics are taken in pregnancy

Women should be encouraged to lower their dietary sodium intake or use a sodium substitute

Antenatal care

Consultations:

- Book for shared care and schedule additional appointments based on individual needs and risk assessment

Antihypertensive treatment:

- Offer antihypertensive treatment based on pre-existing treatment, side effects profile and teratogenicity of drugs
- Stop ACE inhibitors and ARB's within 2 days of notification of pregnancy – offer alternatives
- Aim to keep the blood pressure < 150/100 mm/hg
- If target organ damage is suspected or anticipated aim to keep the blood pressure < 140/90 mm/hg
- Do not offer treatment if the diastolic blood pressure is < 80 mm/hg
- Refer to a specialist in hypertensive disorders if secondary chronic hypertension is present

Fetal Monitoring:

- Carry out an ultrasound scan for fetal growth, amniotic fluid volume and Doppler at 28-30 weeks and 32-34 weeks gestation. If the scan results are normal there is no requirement to repeat after 34 weeks unless clinically indicated

- Carry out a CTG if gestationally feasible if abnormal fetal activity is suspected

Timing of the birth:

- In cases where the blood pressure is $< 160/110$ mm/hg (with or without antihypertensive treatment) there is no indication to delivery before 37 weeks gestation.
- After 37 weeks the timing of the delivery will depend upon maternal and fetal indications and should be decided following risk assessment and discussion with the woman
- In cases of severe refractory hypertension delivery should be offered following a course of corticosteroids – if indicated

Intrapartum Care

Mild or Moderate hypertension (BP $\leq 150/109$ mm/hg):

- Continue with antenatal antihypertensive treatment
- Measure the blood pressure hourly
- Monitor bloods for PIH screen (include clotting screen if considering an epidural)
- Manage second stage as normal if the blood pressure is stable

Severe hypertension (BP $\geq 160/110$ mm/hg):

- Continue antenatal hypertensive treatment
- Measure blood pressure at least every 30 minutes
- Manage second stage as normal if the blood pressure is controlled within agreed target ranges according to risk assessment
- Operative birth should be advised if the blood pressure does not respond to treatment

Postnatal care

Antihypertensive treatment:

- Aim to keep the blood pressure $< 140/90$ mm/hg
- Stop methyldopa within 2 days of delivery and commence pre-pregnancy antihypertensive treatment
- Otherwise continue antihypertensive treatment as clinically indicated

Measure blood pressure:

- Whilst in hospital measure the blood pressure at least twice daily
- Following discharge the blood pressure should be recorded daily if the woman is < 2 days delivered then at least once during days 3-5 post delivery
- There after as clinically indicated if antihypertensive treatment is changed

Breastfeeding:

- Do not give diuretics
- Assess infant feeding and wellbeing daily for the first 2 days
- Offer advice on drug interactions and breastfeeding

Follow up care (in conjunction with the Community Midwife and GP)

- Review long term treatment 2 weeks after birth
- Offer medical review at postnatal check up (either GP or Obstetrician)

(Section 3) Gestational Hypertension (New hypertension presenting after 20 weeks gestation without significant proteinuria)

Antenatal Care

A full assessment should be made by a suitably trained healthcare professional, taking into account the following risk indicators:

- Previous history of pre-eclampsia
- Previous history of gestational hypertension
- Pre-existing vascular disease
- Pre-existing kidney disease
- The presence of moderate risk factors for pre-eclampsia (see section 1)
- Gestational age

The following interventions are recommended for Mild hypertension (BP 140/90 – 149/99 mmhg)

- Admission to hospital is not required
- Hypertensive treatment is not required
- Measure the blood pressure weekly
- Test urine for proteinuria at each visit using an automated reagent-strip reading device or protein: creatinine ratio (this will be carried out either on ANDU or in ANC)
- Continue with routine antenatal blood tests
- Ultrasound scan should be carried out for fetal growth, amniotic fluid assessment and umbilical artery Doppler velocimetry if the diagnosis is confirmed before 34 weeks gestation.
- A normal scan result does not require further ultra sound estimations
- CTG should be performed (if gestationally feasible i.e. ≥ 28 weeks) if fetal activity is abnormal

NB If the woman presents with symptoms before 32 weeks gestation or has any of the factors indicating a high risk of developing pre-eclampsia she should be referred for twice weekly blood pressure assessment and urinalysis

The following interventions are recommended for Moderate hypertension (BP 150/100 – 159/109 mmhg):

- Admission to hospital is not required
- Treat with oral Labetalol and aim to keep BP <150/80-100 mmhg
- Measure blood pressure at least twice weekly
- Test urine for proteinuria at each visit using an automated reagent-strip reading device or protein: creatinine ratio (this will be carried out either on ANDU or in ANC)
- Take bloods for U/E's, kidney function, FBC, LFT's and transaminases
- Ultrasound scan should be carried out for fetal growth, amniotic fluid assessment and umbilical artery Doppler velocimetry if the diagnosis is confirmed before 34 weeks gestation.
- A normal scan result does not require further ultra sound estimations
- CTG should be performed (if gestationally feasible) if fetal activity is abnormal

NB Further blood tests are not required if the results are normal and there is no proteinuria

The following interventions are recommended for Severe hypertension (BP \geq 160/110mmhg):

- Admit to hospital until BP \leq 159/109 mmhg
- Bed rest is not advocated
- Treat with oral Labetalol to keep BP < 150/80-100 mmhg
- Measure blood pressure at least 4 times daily
- Test urine for proteinuria at each visit using an automated reagent-strip reading device or protein: creatinine ratio
- Take bloods for U/E's, kidney function, FBC, LFT's and transaminases on admission and monitor weekly
- Fortnightly ultrasound scan should be carried out for fetal growth, amniotic fluid assessment and umbilical artery doppler velocimetry if conservative management is planned
- Weekly CTG is recommended if fetal monitoring is normal but should be repeated more frequently in the presence of:
 - Change in fetal movement pattern
 - Vaginal bleeding
 - Abdominal pain
 - Maternal deterioration
- Any occurrence of abnormal fetal monitoring should be reported to a Senior Obstetrician

NB follow on care after discharge from hospital once BP is stabilised will consist of:

Twice weekly BP and urine estimation and weekly bloods

A clear plan of care should be documented in the woman's records

Please note the use of antihypertensive drugs other than Labetalol should only be considered following a risk assessment of the side effects to the

woman, the fetus or the newborn infant. In these cases alternatives include Methyldopa or Nifedipine

Timing of birth

Delivery before 37 weeks is not recommended except in the presence of refractory severe hypertension when birth should be offered after completion of a course of corticosteroids (where applicable)

After 37 weeks the timing of the delivery should be agreed between the woman and a senior obstetrician

Intrapartum Care

The following interventions are recommended for mild and moderate hypertension (BP 140/90- 159/109 mmhg)

- Measure BP hourly
- Continue with antenatal hypertensive treatment
- Carry out haematological and biochemical monitoring according to above antenatal criteria even if regional analgesia is considered
- Manage second stage as normal if the BP is stable

The following interventions are recommended for severe hypertension (BP \geq 160/110 mmhg)

- Measure BP at least every 30 minutes
- Continue anti-hypertensive treatment
- Manage second stage normally if the blood pressure is controlled within target ranges
- Operative birth is advisable if the blood pressure does not respond to initial treatment

Postnatal care

Anti-hypertensive treatment:

If the woman has required anti-hypertensive treatment in the antenatal and intra partum period continue post delivery

Commence anti-hypertensive treatment if the woman's blood pressure is \geq 150/100 mmhg

Measure BP recordings:

- Whilst in hospital measure the blood pressure at least twice daily
- Following discharge the blood pressure should be recorded daily if the woman is < 2 days delivered then at least once during days 3-5 post delivery
- As clinically indicated if anti-hypertensive treatment is changed

If the woman has been treated with Methyldopa this should be discontinued within 2 days of delivery

Reduce anti-hypertensive treatment if the blood pressure is $\leq 130/80$ mmhg or consider reducing treatment if the blood pressure is $\leq 140/90$ mmhg

Breastfeeding:

- Do not give diuretics
- Assess infant feeding and wellbeing daily for the first 2 days
- Offer advice on drug interactions and breastfeeding

Follow-up care:

A plan of care should be agreed for transfer to community which includes:

- Recommendations for which healthcare professional should provide care
- The frequency of blood pressure monitoring
- Thresholds for reducing and stopping treatment
- Indications for referral to GP for blood pressure review
- Medical review of anti-hypertensive treatment should be arranged for 2 weeks after transfer to community care
- Medical review at postnatal check
- Referral for specialist assessment of hypertension if treatment is to continue after the postnatal check

(Section 4) Pre-eclampsia (New hypertension after 20 weeks with significant proteinuria)

Assessment of proteinuria

In hospital proteinuria should be assessed using an automated reagent strip reading device or urinary protein: creatinine ration

If the reading from the automated reagent strip testing shows $\geq 1+$ test the urinary protein: creatinine ration or instigate a 24 hour urine collection for protein estimation

(Where urine is collected over a 24 hour period for assessment of protein verbal assurance from the woman that she has collected all the urine passed within the time frame is obtained)

Significant proteinuria is assessed as a urinary protein: creatinine ratio of > 30 mg/mmol or a 24 hour urine result of > 300 mg of protein

Antenatal care of Mild hypertension (BP 140/90-149/99 mmhg) with significant proteinuria

A full assessment should be made by a suitably trained healthcare professional

The woman should be admitted to hospital

No medication is required

Measure the blood pressure at least 4 times daily

Take blood for kidney function, FBC, U/E, transaminases and bilirubin twice weekly

Delivery before 34 weeks gestation

Manage conservatively

The consultant obstetrician should:

- Document maternal and fetal indications for elective birth before 34 weeks
- Document a plan for fetal monitoring (see below)
- Consider delivery in consultation with neonatal and anaesthetic teams (following a course of corticosteroids if appropriate) if there is severe refractory hypertension or changes in the maternal or fetal wellbeing indicates delivery is necessary

Delivery at 34+0 to 36+6 weeks gestation

The consultant obstetrician or deputy should aim to deliver the baby after 34 weeks following a course of corticosteroids even if the blood pressure is controlled

Aim to deliver between 34+0 and 36+6 dependant upon maternal and fetal condition and risk factors

Delivery after 37+0 weeks gestation

The consultant obstetrician or deputy should aim to deliver within 24-48 hours

Antenatal care of Moderate hypertension (BP 150/100 159/109 mmhg) with significant proteinuria

A full assessment should be made by a suitably trained healthcare professional

The woman should be admitted to hospital

Treat with oral Labetalol and aim to keep the blood pressure < 150/80-100 mmhg

Offer treatment other than Labetalol only after considering the side effects to the woman and fetus – alternative treatment includes methyldopa or nifedipine

Measure the blood pressure at least 4 times daily

Take blood for kidney function, FBC, U/E, transaminases and bilirubin three times per week

Delivery before 34 weeks gestation

Manage conservatively

The consultant obstetrician or deputy should:

Document maternal and fetal indications for elective birth before 34 weeks

- Document a plan for fetal monitoring (see below)
- Consider delivery in consultation with neonatal and anaesthetic teams (following a course of corticosteroids if appropriate) if there is severe refractory hypertension or changes in the maternal or fetal wellbeing indicates delivery is necessary

Delivery at 34+0 to 36+6 weeks gestation

The consultant obstetrician or deputy should aim to deliver the baby after 34 weeks following a course of corticosteroids even if the blood pressure is controlled

Aim to deliver between 34+0 and 36+6 dependant upon maternal and fetal condition and risk factors

Delivery after 37+0 weeks gestation

The consultant obstetrician or deputy should aim to deliver within 24-48 hours

Antenatal care of Severe Hypertension (BP \geq 160/110 mmhg) with significant proteinuria

A full assessment should be made by a suitably trained healthcare professional

The woman should be admitted to hospital

The woman may need level 2 critical care (i.e.) nursed in HDU – this decision will be made by the Consultant obstetrician or deputy

If level 2 care is not required the following treatment is suggested:

- Treat with oral Labetalol and aim to keep the blood pressure < 150/80-100 mmhg
- Offer treatment other than Labetalol only after considering the side effects to the woman and fetus – alternative treatment includes methyldopa or nifedipine

- Measure blood pressure > 4 times daily depending on clinical picture
- Take blood for kidney function, FBC, U/E, transaminases and bilirubin three times per week

Delivery before 34 weeks gestation

Manage conservatively

The consultant obstetrician or deputy should:

- Document maternal and fetal indications for elective birth before 34 weeks
- Document a plan for fetal monitoring (see below)
- Consider delivery in consultation with neonatal and anaesthetic teams (following a course of corticosteroids if appropriate) if there is severe refractory hypertension or changes in the maternal or fetal wellbeing indicates delivery is necessary

Delivery at 34+0 to 36+6 weeks gestation

The consultant obstetrician or deputy should aim to deliver the baby after 34 weeks following a course of corticosteroids even if the blood pressure is controlled

Aim to deliver between 34+0 and 36+6 dependant upon maternal and fetal condition and risk factors

Delivery after 37+0 weeks gestation

The consultant obstetrician or deputy should aim to deliver within 24-48 hours

Fetal Monitoring in cases of pre-eclampsia with significant proteinuria

Perform an ultrasound scan for fetal growth, liquor volume and Umbilical Artery Doppler on diagnosis

Report any abnormal results to the Consultant Obstetrician or deputy

Perform external CTG on admission and repeat if:

- There is a change in the fetal movement pattern
- The woman complains of abdominal pain
- There is evidence of vaginal bleeding
- The woman's condition deteriorates

Weekly fetal monitoring is recommended if the scan and CTG results are normal

Plans for fetal monitoring should be recorded in the woman's case notes and include:

- The frequency of monitoring
- The decision to administer maternal corticosteroids

- Parameters for intervention including discussions with Paediatricians and Obstetric Anaesthetists

Intrapartum care for Mild/Moderate hypertension (140/90-159/109 mmhg) with significant proteinuria

Measure blood pressure hourly
Continue with antenatal hypertensive treatment

Carry out haematological and biochemical monitoring according to above antenatal criteria even if regional analgesia is considered

Do not routinely limit the duration of the second stage if the blood pressure is stable

Postnatal care

If the woman is **not** on anti-hypertensive treatment:

- Measure her blood pressure 4 times a day whilst an inpatient
- At least once between days 3 – 5 then on alternate days if the blood pressure has been abnormal
- Commence antihypertensive treatment if the blood pressure is \geq 150/100 mmhg

If the woman **is** on antihypertensive treatment:

- Continue with treatment but if methyldopa has been used to treat hypertension, stop treatment within 2 days of delivery
- Reduce anti-hypertensive treatment if the blood pressure falls to < 130/80 mmhg (consider reducing treatment if the blood pressure falls to < 140/90 mmhg)
- Measure the blood pressure at least 4 times daily whilst in hospital

Check for the presence of headache or epigastric pain when measuring blood pressure

Check platelet count, transaminases and serum creatinine levels for 48-72 hours in the cases of mild – moderate hypertension or after step-down from critical care. Repeat as clinically indicated

Continue to measure fluid balance following step-down from critical care unless creatinine levels are normal

Transfer to community care when the blood pressure is \geq 150/100 mmhg, with stable/normal blood results and no symptoms of pre-eclampsia

Breastfeeding:

- Do not give diuretics
- Assess infant feeding and wellbeing daily for the first 2 days
- Offer advice on drug interactions and breastfeeding

Follow-up Care

The woman should have a care plan for transfer to community care which includes:

- Frequency of blood pressure monitoring
- Thresholds for reducing or stopping treatment
- Indications for referral to GP for blood pressure review
- Advice to the woman re monitoring potential symptoms

The woman's blood pressure should be monitored every 1-2 days for 2 weeks – until anti-hypertensive treatment is discontinued and the blood pressure is normal

The woman will require a medical review if she continues on anti-hypertensive treatment after 2 weeks

Repeat platelet count, transaminases and creatinine levels as clinically indicated

The woman should have a medical review at her postnatal check-up

The woman should be referred to a specialist if she is still on anti-hypertensive treatment at her postnatal check-up

Blood should be repeated at the postnatal check –up if clinically indicated

Urine should be tested for the presence of protein at the postnatal check-up:

- If protein level is $\geq 1+$ review the woman at 3 months to assess kidney function. Consider referral to a kidney specialist

(Section 5) Advice for women in the postnatal period

Breastfeeding

Women should be re-assured that the following anti-hypertensive treatments are not contra-indicated in breastfeeding:

- Labetalol
- Nifedipine
- Enalapril
- Captopril
- Atenolol
- Metoprolol

Women should be advised that there is insufficient evidence on the safety of the following drugs in relation to breastfeeding:

- ARBs
- Amlodipine
- ACE inhibitors other than Enalapril and Captopril

Weight Management

Women who have suffered from pre-eclampsia should be advised to achieve and maintain a BMI between 18.5 and 24.9 before becoming pregnant again

Long term health risks

Women should be advised of the risks for future pregnancies and long term health risks as part of their postnatal care

Equality Impact Assessment

Women's and Children's Services are committed to ensure that both current and potential service users and their families will not be discriminated against on the grounds of religion, gender, race, sexuality, age, disability, ethnic origin, social circumstance or background. The principles of tolerance, understanding and respect for others are central to what we believe and central to all care provided.

Roles and Responsibilities

All healthcare professionals working within the Maternity Unit at BHNFT and in Community are responsible for ensuring this guideline is followed

Audit / Monitoring

Any adverse incidents arising from the implementation of or failure to implement this guideline will be addressed through the Trust's Sentinel reporting system.

Identified trends will be addressed through the Risk Management strategy.

Any incidents requiring a Case Review, Root Cause Analysis or Serious Incident review will be addressed accordingly

Training

Training will be given as documented in the Maternity Training Needs Analysis. This is updated on an annual basis.

Dissemination and Access

This guideline is part of the Labour Ward Handbook. A hard copy of the handbook is available in all areas. An electronic copy is available via the Intranet or the Practice Facilitator Midwife

Review

This guideline will be reviewed within three years of authorization. It may be reviewed within this period if there are any reports, new evidence, guidelines or external standards suggesting that a guideline review is required

References

National Institute for Health and Clinical Excellence (NICE), Clinical guideline 107, Hypertension in pregnancy (2010)

British Hypertension Society Guidelines. Guideline for the management of hypertension: report of the fourth working party of the British Hypertension Society, 2004-BHS, Journal of Human Hypertension (2004) 18, 139-185

Glossary of Terms

ACE inhibitor – Angiotensin-converting enzyme inhibitor
ARB – Angiotensin II receptor blocker
BHNFT – Barnsley Hospital NHS Foundation Trust
BMI – Body mass index
BP – Blood pressure
CTG – Cardiotocograph
FBC – Full blood count
GP – General practitioner
HDU – High Dependency Unit
LFT – Liver function test
NHS – National Health Service
NICE – National Institute for Health and Clinical Excellence
PIH – Pregnancy induced hypertension
SLE – Systemic Lupus Erythematosus
U/E – Urea and electrolytes
UK – United Kingdom

Appendices

Appendix 1 Blood pressure measurement and cuff size

Appendix 2 – Obstetric Guideline Checklist

Appendix 1

Blood pressure measurement and cuff size

Any devices used to measure blood pressure should be properly validated, maintained and regularly re-calibrated

Healthcare professionals responsible for taking blood pressure should have received adequate training in the procedure

It is important to use the correct cuff size when measuring a woman's blood pressure

The bladder in the cuff should encircle at least 80% of the upper arm – A universal cuff is recommended with a choice of 3 different bladder sizes depending on the circumference of the arm:

- Small adult/child (bladder size 12x18cm) - Arm circumference <23cm
- Standard adult (bladder size 12x26cm) - Arm circumference < 33cm
- Large Adult (bladder size 12x40cm) - Arm circumference < 50cm
- Adult thigh cuff (20x42cm) – Arm circumference < 53cm

An adult thigh cuff is not a recommended alternative to a standard adult cuff unless the circumference of the arm is < 53cm

The woman should be resting position with her arm supported at the level of her heart

Due to the variations in readings when using mercury, aneroid or automated blood pressure devices it is recommended that the same method is used for serial blood pressure recordings

Appendix 2

Obstetric Guideline Checklist

Guideline for the Management of Hypertensive Disorders in Pregnancy (Excluding Severe Pre-eclampsia and eclampsia)	Lead Professional:	Review Date August 2015
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Formatting	Included/attached
Headings	included
Quality Impact Statement	included
References	included

Consultation Process	Date Disseminated/Presented	Relevant information
Initial circulation to Guideline Group and relevant parties (draft 1)	10/07/2012	Ratified 10/07/2012
Amended draft sent to development lead		
Final Draft presented to Guideline Group for ratification		
Amended/final Draft presented to Women's Governance group for Ratification	10/07/2012	Date ratified: 10/07/2012

Archiving	Date of distribution	Date of retrieval of old guideline	Date of Archiving
Distribution and Retrieval	15/08/2012	N/A	

Training Package devised	Date	
Training Package Delivered	Date	

Audit/Monitoring	Method	Date Commenced	Date Completed

Audit Process			
Monitoring process			