




# 12 Lead Electrocardiogram (ECG)

<b>POLICY NO &amp; CATEGORY</b>	<b>C40</b>	<b>Corporate Governance</b>
<b>VERSION NO &amp; DATE</b>	<b>3</b>	<b>April 2021</b>
<b>RATIFYING COMMITTEE or EXECUTIVE DIRECTOR</b>	<b>Physical health committee Clinical Effectiveness Group</b>	
<b>DATE RATIFIED</b>	<b>June 2021</b>	
<b>NEXT ANTICIPATED REVIEW DATE:</b>	<b>June 2024</b>	
<b>EXECUTIVE DIRECTOR</b>	<b>Executive Director of Quality and Safety</b>	
<b>POLICY LEAD</b>	<b>Lead nurse for physical health</b>	
<b>POLICY AUTHOR</b> <i>(if different from above)</i>		
<b>Exec Sign off signature (electronic)</b>		
<b>Disclosable under Freedom of Information Action 2000</b>	<b>Yes</b>	

## POLICY CONTEXT

This policy outlines the expectation of Birmingham and Solihull Mental NHS health foundation trust (BSMHFT) in the safe and effective delivery of an Electrocardiogram (ECG) to safeguard the cardiac health of our service users who are in our care

This policy including the operational detail for, referral processes, delivery and the reporting of an ECG.

The ECG service is delivered centrally; however it is also relevant to all other trust staff who are involved in providing ECGs to their teams locally.

## POLICY REQUIREMENT

This policy identifies:

- The requirement of all trust staff at the point they identify a service user needs an ECG
- The roles and responsibilities of all staff in relation to referring, completing, reporting and interpreting of ECGs.
- The operational standards needed to carry out an ECG (including equipment used to carry out ECGs and competency requirements) for a safe and effective service

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# 1 INTRODUCTION

## 1.1 Rationale

Birmingham and Solihull Mental Health NHS Foundation Trust (BSMHFT) is committed to providing a high standard of care to all its services users. As part of that care, staff must be able to recognise the need for good physical health and ensure we do everything possible to support these service users at risk of cardiovascular disease (whether lifestyle related or related to the medication we prescribe.) (Denes, Larson, Lloyd-Jones, Prineas, & Greenland, 2007) (Mora, Redberg, Sharrett, & Blumenthal, 2005) (Tay, Poh, & Kitney, 2015)

An ECG is a non-invasive procedure used to obtain information about the electrophysiology of the heart, including the heart rate and rhythm. It is representation of the heart's electrical activity during depolarisation and repolarisation recorded from electrodes placed on the body surface, that enable pathology to be localised to particular regions of the heart.

ECG is still regarded as a gold standard investigation and is often the first diagnostic test performed in people at risk of heart disease, starting antipsychotic medication, monitoring QTC intervals or in service users with previously diagnosed heart disease or at risk of a cardiac event.

The portability, low cost and ease of operations means that ECG's can be recorded quickly and easily by a wide variety of personnel in a number of clinical locations throughout the trust (including clinics and inpatient settings)

This policy provide guidance and support to all clinical staff performing ECG's to ensure that they are performed in line with 'national' recommended guidelines, ensuring consistency across all departments of the trust (Osipov, Behzadi, Kane, Petrides, & Clifford, 2015) (NICE, 2014) (NICE, 2010) (NICE, 2008)

## 1.2. Scope

This policy applies to all clinicians in the trust who are involved in the requesting, taking, reporting and/or acting on the results of an ECG.

The interpretation of the recording should only be completed by professionals deemed suitably qualified to do so, (such as doctors, external interpretation provider, trained clinicians or the qualified ECG technicians.)

## 1.3. Principles

The policy sets out the following specific objectives:

- All staff will be aware of their roles and responsibilities in regard to ECG requests, recordings and interpretation
- All staff whose job description requires them to undertake the procedure of taking an ECG's will have achieved competency which is recognised by the trust
- All staff will be expected to work within their own competency framework
- Competence in taking ECG's will be reviewed annually with a competency assessment. The ECG competency register is available on Connect.  
<http://connect/corporate/corporate-clinical-services/physical-health/Pages/ECG.aspx>
- When there is a need to refer to the trust ECG service:

- Referrals will be made on the Rio clinical system to ensure appropriate safety advice will be available to the ECG technicians.
- Once indicated, the ECG recordings will be carried out in a timely manner according to its urgency.
- ECG's will be recorded safely and accurately.
- There will be clear communication with the service user, the mental health clinical team and the primary care provider.

## 2 POLICY

- 2.1 All staff employed by Birmingham and Solihull Mental Health NHS Foundation Trust must ensure that they work within the guidelines laid down by the relevant professional bodies and the Medicines and Healthcare Products Regulatory Agency (MHRA). **(Society for Cardiological Science and Technology, 2017)**
- 2.2 All staff involved in the taking of or interpretation of ECGs must follow the agreed procedure.
- 2.3 The policy also includes the workings of the ECG service which is currently available for the whole of Birmingham & Solihull Mental Health Trust which is available to both community service users and those residing in "in-patient" units.

**This policy should be disregarded if the service user develops acute chest pain, becomes unwell or collapses. The first priority is always to follow the resuscitation guidelines and secure immediate help by way of calling 999 and follow emergency procedures.**

## 3 PROCEDURE

### 3.1 Referral Criteria to the ECG Service

#### 3.1.1 ECG Service Structure

The ECG service comes under corporate function of BSMHFT. The service is available at multiple locations across the Trust, which can be accessed through a central booking system on Rio. The referrals are for inpatient units or for service users to attend clinics already in operation. The schedule of ECG clinics can be found on the ECG pages of Connect. <http://connect/corporate/corporate-clinical-services/physical-health/Pages/ECG.aspx>

### 3.2 ECG Service Principles

- 3.2.1 The early detection of cardiac complaints can be effectively managed to prevent early morbidity. The ECG service is a key aspect of managing risk to service users' physical health, and assisting them with accessing the care they need, to ensure a healthy and functional heart
- 3.2.2 The service is for all teams, who have service users current registered under the care of BSMHFT and can be referred by any professional member of the multidiscipline team (MDT)
- 3.2.3 Referral is always done via the 'Rio' clinical system and the ECG will be delivered within the service users local clinical hubs for easy access.
- 3.2.4 After completing the Rio referral, an urgent referral can be called through to the ECG office on 0121 301 6646 or email [bsmhft.ecgservice@nhs.net](mailto:bsmhft.ecgservice@nhs.net) for an

appointments which needs urgent action (answer machine is available out of hours to be actions on the next working day)

- 3.2.5 Before booking an ECG appointment, the process must be clearly explained to service user and supporting literature given so they understand of the importance of this procedure ([Appendix 2](#))
- 3.2.6 All service user's booked for an ECG will be sent an appointment letter, and provided with a text reminder alert on booking and the day prior to the appointment (if they have agreed to the service). This appointment will be available on the service user's clinical diary in Rio.
- 3.2.7 Any risk to the ECG service staff must be clearly added to the Rio clinical system. Significant risk should be telephoned or emailed through to the ECG office by the referrer to protect the safety of the ECG staff. (0121 301 6646 or [bsmhft.ecgservice@nhs.net](mailto:bsmhft.ecgservice@nhs.net))
- 3.2.8 The ECG technician will undertake the ECG at the earliest opportunity to suit the service user and clinic schedule.
- 3.2.9 The results will be documented and trace uploaded onto Rio promptly (but no more than close of play on the day of completion)
- 3.2.10 After completing the procedure the service user will be discharged from the ECG service. This will generate an email to the referrer of the outcome of the appointment and they will be advised to review the ECG at the earliest opportunity
- 3.2.11 The referral pathway is available in [Appendix 3](#)

**N.B– ECG clinics are a scarce commodity and every effort needs to be made to minimise the DNA rate.**

*Self- referrals will not be accepted directly from service users*

### 3.3 Emergency ECG requirements

- 3.3.1 **Symptoms of acute chest pain, shortness of breath and sustained hypotension and chest pain should be dealt with through the emergency services and an ambulance called to transport the service user to A&E for a comprehensive cardiac/heart assessment. (Rabasse, Johnson, & Malik, 2013)**
- 3.3.2 If the local practitioner requires an ECG urgently they can request the local medic or competent practitioner in that area to undertake the procedure. However this needs to be reviewed by the requesting practitioner immediately and appropriate action taken.

### 3.4 Urgent Appointment schedule

- 3.4.1 All attempts will be made to see the client within 7 days from referral. There may be a need for the health or support worker to bring the service user to an alternative clinic venue being run where there is a slot available, (which potentially could be in another locality to the service user's residential area.)
- 3.4.2 Urgent referrals will be seen in ward areas where the service user is an inpatient.
- 3.4.3 If the technicians are unable to attend unexpectedly then the ECG Connect pages has a list of where the ECG machines are kept locally and the database of competent ECG trained staff and their location. See link to the intranet. <http://connect/corporate/corporate-clinical-services/physical-health/Pages/ECG.aspx>

### 3.5 Routine

- 3.5.1 All attempts will be made to see the client within 28 days from referral. (Unless the service user highlights the need for a later date or has had to cancel the appointment) There may be a need for the mental health worker to contact the ECG office if there is a concern about the service user may not attend. This will support collaborative working to prevent DNA's, ensuring all clinic slots are appropriately used and support the service user in having this required procedure

### 3.6 Home bound services users

- 3.6.1 Due to the additional time needed for a home visit, great consideration is needed before the practitioner requests a home visit.
- 3.6.2 All home visits must telephone through to the ECG office (0121 301 6646) as well as a Rio referral. The rationale for the home visit and the urgency needs to be communicated.
- 3.6.3 The ECG technician must always be accompanied by a member of their team as the links to the clinical system (especially risk) is minimised. This will support any additional information being available.
- 3.6.4 Home visits may also be carried out by trained members of the community team who have the competency in the ECG techniques. Local clinical staff must risk assess if they are safe to complete an ECG alone or if there is a need for supporting staff.

### 3.7 Assessment Process

- 3.7.1 Service users will be seen in a clinic situation, bedroom on the ward or private space at home, and be allowed discretion for the duration of the test. The service user will need to reveal their chest area to allow 6 electrodes to be applied to the chest wall and 1 electrode to each limb. The process should not take more than 10-20 minutes in total. The trace will be uploaded onto Rio on the same day; however a hard copy of the trace can be given to the service users to take to their GP with an accompanying letter if it is deemed necessary. (3.9.3)

### 3.8 Consent

- 3.8.1 Service user's referred for ECG will have consented to undertake this procedure prior to attending the appointment, in accordance with the consent to treatment guidelines (**NHS choices, 2016**)
- 3.8.2 Where the service user lacks capacity and the service user refuses to have an ECG the clinical team will make a decision on how to precede dependant on the individual circumstances and need. The clinical team will discuss this fully with the ECG service and support them throughout the procedure.

### 3.9 Reports to Interface with other MDT Professionals

- 3.9.1 The ECG trace will be uploaded onto Rio in 'clinical documentation' on the same day; however there is an aim to do this within 6 hours.
- 3.9.2 The ECG technician will clearly document the basic outcome of the appointment in the service user's progress notes.
- 3.9.3 Should the clinician carrying out the trace have cause for concern they will act upon this concern immediately by:-
- Contacting the clinical team who requested the ECG for an urgently review

- Advised the service user to book to have a routine appointment to the GP (with an enclosing letter and copy of the ECG trace) ([Appendix 4](#)) and/or
- Sending to external interpretation provider for a second opinion ([Appendix 5 and 6](#))
- Or call an ambulance to take to A&E (if urgent attention is required)

### 3.10 DNA ECG appointments

- 3.10.1 Service users who do not attend, the ECG technician will review Rio to evaluate if there is a reason for non-attendance, and rebook if appropriate.
- 3.10.2 Cancellations will be rebooked into the next available clinic or next suitable clinic to the service user needs.
- 3.10.3 This will be clearly documented in Rio progress notes and the service users Rio diary.
- 3.10.4 Service users will be discharged from caseload; and an email will be generated and sent to the referrer to advise them of this outcome

### 3.11 Risk to ECG staff

- 3.11.1 Where there is a concern for the ECG technician safety, a risk assessment will be performed in collaboration with the necessary health care professionals, the current CPA and risk assessment will be reviewed on Rio.
- 3.11.2 If the service user is considered **moderate to high risk**, the ECG technician will require a second staff member from the referring clinical team to be present at all times. (This could include ward staff for inpatient units.)
- 3.11.3 Service users will always be seen in an environment with a functioning panic alarm or be provided with a locally provided personal alarm on site.

### 3.12 Out of hours/bank holidays ECG service

- 3.12.1 If an ECG trace is required outside working hours or on bank holidays then the ECG this can be completed by a competent member of the local team.
- 3.12.2 The Connect pages include a list of where machines are stored and the database of competent ECG trained staff and their location on the web page.  
<http://connect/corporate/corporate-clinical-services/physical-health/Pages/ECG.aspx>

### 3.13 **Equipment requirements for the safe recording of an ECG:**

- 3.13.1 All ECG recording machines will be serviced and calibrated annually or in line with the manufacturer's guidelines. The responsibility for calibration lies with the individual service or practice who owns/hosts the machine
- 3.13.2 The ECG recording machine must be checked for safety prior to the procedure being undertaken by the health worker performing the function. Any faults with the machine must be recorded and the machine placed out of order until they have been rectified.
- 3.13.3 It should be noted that some ECG recording machines incorporate rhythm diagnosis software. Although accurate to a degree they are not definitive, this should never be used over clinical judgement.
- 3.13.4 Axillary equipment required should be in date and fit for purpose. Please see [Appendix 7](#) for approved equipment and sundries to acquire an ECG.
- 3.13.5 The room that is used to carry out ECGs must be fit for purpose and contain equipment as outlined in [Appendix 8](#).

### 3.14 **ECGs provided locally by competent staff**

- 3.14.1 A local clinician can record an ECG if their 'ECG competency framework' has been achieved and the following criterion has been fulfilled:
- 3.14.2 It is recognised as part of the practitioner's role.
- 3.14.3 The practitioner is confident in their abilities
- 3.14.4 The practitioner has completed all the necessary qualification, competency and have upheld their competency with an annual reassessment
- 3.14.5 Practitioners should be frequently undertaking ECGs to maintain competency. **(Salerno, Alguire, & Waxman, 2003) (Salerno, Alguire, & Waxman, 2003)**

### 3.15 **Practitioners who fulfil the above criteria can record an ECG if:**

- 3.15.1 The ECG has been requested by a clinician as part of the service users care plan or treatment needs.
- 3.15.2 The patient has consented for the procedure in line with 'Consent to treatment guidelines **(NHS choices, 2016)**
- 3.15.3 The correct procedure is adhered to for recording an ECG as set out in this policy.
- 3.15.4 A person skilled in the interpretation of 12 lead ECG's will reports on the recording as soon as possible.
- 3.15.5 As a registered clinician, if you delegate recording an ECG to other health care workers, (i.e. health care assistants), you must ensure that both you and the delegate are satisfied they have the competency to undertake the procedure.



### 3.16 **Staff should not proceed with the recording of a 12 lead ECG if:**

- 3.16.1 The patient develops chest pain, becomes unwell or collapses. The first priority is to get immediate help by way of calling 999 for an ambulance or by using emergency procedures in any clinical area.
- 3.16.2 The practitioner is not confident with their competence level
- 3.16.3 The ECG competency framework has not been completed or achieved (or equivalent training for a medic)
- 3.16.4 The patient does not consent to the procedure
- 3.16.5 There is a risk to the ECG practitioner's safety
- 3.16.6 There is no system in place to report on the recording
- 3.16.7 There is not a suitable place to carry out the ECG

### 3.17 **The External Interpretation Service**

- 3.17.1 The interpretation service will be provided by an external provider (presently Broomwell Healthwatch) and the contract will be monitored by the lead nurse for physical health.
- 3.17.2 Once a member of the team has decided that an ECG requires further interpretation the ECG (after reviewed by the medic) it should be sent to this provider by an encrypted and secure method. They can only be sent from an nhs.net email address to the providers own dedicated nhs.net email address.
- 3.17.3 ECGs will be interpreted, reported on and sent back to the trust by email (as per the sender's request) within 24 hours. If the sender needs an interpretation more urgently, they can mark the ECG for immediate interpretation, it will then be reported on and sent back within on average 15-20 minutes and not later than 75 minutes (this involves an additional cost). If the sender wishes the interpretation to be done even quicker than that they can call the provider and request that. They can then receive a verbal interpretation whilst they are on the call and a written report within a few minutes.
- 3.17.4 Every time an ECG is sent to the provider, the sender must provide a contact name and number confirm whether they would prefer a response by email or fax, (and which email address/fax number they wish the interpretation report to be sent back to). When sent by email, the provider will send the report from their dedicated nhs.net address to the nhs.net address specified by the sender so that the return email will also be encrypted and secure. The format of the report file will be as an attachment in pdf format which can easily be integrated into the Rio system.
- 3.17.5 This service is available 24 hours a day, 365 days a year. The timeframes described above (including the urgent reporting where requested) will be met at all times 24 hours a day, 365 days a year.
- 3.17.6 See [Appendix 5 and 6](#) to links to the current external provider

### 3.18 **The procedure for recording a 12 lead ECG**

- 3.18.1 The procedure for preparation, placement, recording and post procedure is to be followed by competent practitioners in alignment with the 'SCST clinical guidelines by consensus (**Society for Cardiological Science and Technology, 2017**) and is available in [Appendix 9](#)

### 3.19 **Training Implications**

- 3.19.1 All staff required to undertake ECG recording as part of their job role is required to undergo training and complete the competency framework to ensure consistency,

minimise risk and ensure skills, knowledge and clinical competence. **(Salerno, Alguire, & Waxman, 2003) (Crawford & Doherty, 2010)**

- 3.19.2 Annual updates are required to maintain competence. Medical staff that carries out ECGs are responsible for maintaining their own competencies.
- 3.19.3 It is the individual staff members' responsibility, in conjunction with their line manager's approval, to request and attend the training and complete the competency framework.
- 3.19.4 It is the individual staff members' responsibility, in conjunction with their line manager's approval, to request and complete the required annual update. **(Wolff, Long, McComb, Richley, & Mercer, 2012)**

### 3.20 Monitoring, Evaluation and Audit

- 3.20.1 It is each clinical team's responsibility to monitor the training and competence within their clinical teams. A register of competent practitioners will be held by the ECG service but is available on the connect pages <http://connect/corporate/corporate-clinical-services/physical-health/Pages/ECG.aspx>
- 3.20.2 The responsibility lies with each individual to arrange annual reassessment.
- 3.20.3 Reassessment documentation will be compared against baseline assessment but will include latest evidence and guidelines.
- 3.20.4 If reassessment demonstrates lapse in competence the individual staff member and their line manager will be informed. This may require further training or actions to continue their competency
- 3.20.5 ECG recording must not be undertaken until the full competency framework has been completed and achieved.

## 4 RESPONSIBILITIES

This should summarise defined responsibilities relevant to the policy.

Post(s)	Responsibilities	Ref
<b>All clinical staff</b>	All staff involved in the request for ECG, the taking or the interpretation must be familiar with this document All staff are involved in the process of taking an ECG are responsible for their own knowledge and competency	
<b>Service, Clinical and Corporate Directors</b>	Ensure that arrangements are in place to support a safe and accessible ECG service	
<b>Policy Lead</b>	Ensure monitoring processes are in place Ensure this document is reviewed annually to ensure it is keeping pace with developments	
<b>Executive Director</b>	Ensure that arrangements are in place to support a safe and accessible ECG service	
<b>Non clinical staff</b>	All staff involved in organising the ECG referral or uploading of the information have appropriate understanding of the process	

## 5 Development and Consultation process consisting of:

An outline of who has been involved in developing the policy and procedure including trust forums and service user and carer groups.

Consultation summary		
Date policy issued for consultation	April 2021	
Number of versions produced for consultation	1	
Committees / meetings where policy formally discussed	Date(s) Physical health committee 6 <sup>th</sup> April 2021	
ECG working group	Previous versions January 2017 and 30 <sup>th</sup> May 2018	
Physical health committee	6 <sup>th</sup> April 2021	
Where received	Summary of feedback	Actions / Response

## 6 REFERENCE DOCUMENTS

Crawford, J., & Doherty, L. (2010, Dec). Ten steps to recording a standard 12-lead ECG. *Practice Nursing, 21*(12), 622-630.

Denes, P., Larson, J., Lloyd-Jones, D., Prineas, R., & Greenland, P. (2007). Major and Minor ECG abnormalities in asymptomatic women and risk of cardiovascular events and mortality. *Journal of the American medical Association, 297*(9), 978-985.

Mora, S., Redberg, R., Sharrett, A., & Blumenthal, R. (2005). Enhanced risk assessment in asymptomatic individuals with exercise testing and Framingham risk score. *Circulation, 112*(11), 1566-1572.

NHS choices. (2016, March 3). *Consent to treatment*. Retrieved August 26, 2016, from NHS Choices: <http://www.nhs.uk/Conditions/Consent-to-treatment/Pages/introduction.aspx>

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Tay, D., Poh, C., & Kitney, R. (2015, April). A novel neural-inspired learning algorithm with application to clinical risk prediction. *Journal of biomedical informatics*, 54, 305-314.

Wolff, A., Long, S., McComb, J., Richley, D., & Mercer, P. (2012). The gap between training and provision: a primary care-based ECG survey in north-east England. *British Journal of Cardiol*(19), 38-40.

### **Associated Trust Policies and Procedures**

C12 - Care records management policy (electronic and manual)

<http://connect/corporate/governance/Policies/Care Records Policy.pdf>

Management of the deteriorating patient and resuscitation policy

<http://connect/corporate/corporate-clinical-services/resuscitation/Pages/default.aspx>

C38 - Physical Health Assessment policy

<http://connect/corporate/governance/Policies/Physical%20Health%20Assessment%20Policy.pdf>

IC 01 – Infection Prevention and Control Overarching Policy

<http://connect/corporate/governance/Policies/Infection%20Control%20Policy.pdf>

## **7 BIBLIOGRAPHY**

Hampton J. (2013) *The ECG made Easy*. (6th ed). Churchill Livingstone: Edinburgh

Kligfield, P et al (2007) Recommendations for the standardization and the interpretation of the electrocardiogram: Part 1. *Heart Rhythm*. 4 (3): 394-412

Riley J. (2003) Reading the ECG Part 1. *Nurse 2 Nurses*. 3 (8): 39-40

## **8 GLOSSARY**

### **12 lead electrocardiogram (ECG)**

The recording of the heart's electrical signals by attaching electrodes in 10 standard positions on the limbs and the surface of the chest. This provides a display of the electrical activity of the heart viewed from 12 different directions (NICE 2010 A)

### **ECG Interpretation**

The process to examine the ECG recording to determine the heart rate, rhythm, specific measurements of the complexes and intervals and to establish if there are any abnormalities.

## 9 AUDIT AND ASSURANCE

- 9.1.1 The key performance indicators (KPI) dataset for the contract with the external provider will include; Quality controls of readings through random sampling of inter ratter reliability tests, twice a year with an external control to the organisation of up to 20 traces.
- 9.1.2 Random sampling of care records of patients scheduled for ECG to ascertain turnaround of ECG undertaken to return of the report and trace into the care record. The goal is 100% return within 96 hours into the organisation, where all reports will be date stamped; however, there is acceptance of 10% slippage taking into account postal delays and peaks of service demand.
- 9.1.3 Quarterly contract reviews / performance monitoring review meetings between BSMHFT and external provider representatives will address any service related issues as detailed above.
- 9.1.4 A register of competent staff will be maintained by the head of service. It will be the clinicians' responsibility to ensure that they remain competent and provide evidence on an annual basis. Names will be removed from the register if evidence of competency is not provided.

Element to be monitored	Lead	Tool	Frequency	Reporting Arrangements
Time from referred to completion	Lead Nurse for Physical health	RiO	Bi-yearly	Physical health committee
Quality control readings at Broomwell health care	Lead Nurse for Physical health	Contract review	Bi-yearly	Physical health committee
Competence of trust staff undertaking the ECG procedure	Lead Nurse for Physical health	Competency register	Bi-yearly	Physical health committee

## 10 APPENDICES

Equality Analysis Screening Form	Appendix 1	page 13-16
Electrocardiogram (ECG) service information leaflet	Appendix 2	page 17
ECG referral pathway	Appendix 3	page 18
ECG post consultation letter	Appendix 4	page 19
External interpretation provider information	Appendix 5	pages 20
External interpretation provider referral form	Appendix 6	page 21
Axillary equipment for ECG list	Appendix 7	page 22
ECG room and patient setup requirements	Appendix 8	pages 23-24
The ECG procedure	Appendix 9	pages 25-27

### Equality Analysis Screening Form

A word version of this document can be found on the HR support pages on Connect

<http://connect/corporate/humanresources/managementsupport/Pages/default.aspx>

<b>Title of Proposal</b>	<b>12 Lead Electrocardiogram (ECG) Policy 2021</b>			
<b>Person Completing this proposal</b>	Lyndi Wiltshire	<b>Role or title</b>	Lead Nurse for Physical health	
<b>Division</b>	Corporate	<b>Service Area</b>	Physical Health	
<b>Date Started</b>	8 <sup>th</sup> March 2021	<b>Date completed</b>	11 <sup>th</sup> March 2021	
<b>Main purpose and aims of the proposal and how it fits in with the wider strategic aims and objectives of the organisation.</b>				
ECG is the gold standard investigation and is often the first diagnostic test in people at risk of heart disease, starting antipsychotic medication, monitoring QTc intervals or in service users with previously diagnosed heart disease or at risk of a cardiac event.				
<b>Who will benefit from the proposal?</b>				
Service users who are having care within the trust (Inpatient and Community)				
<b>Impacts on different Personal Protected Characteristics – Helpful Questions:</b>				
<i>Does this proposal promote equality of opportunity?</i>		<i>Promote good community relations?</i>		
<i>Eliminate discrimination?</i>		<i>Promote positive attitudes towards disabled people?</i>		
<i>Eliminate harassment?</i>		<i>Consider more favourable treatment of disabled people?</i>		
<i>Eliminate victimisation?</i>		<i>Promote involvement and consultation?</i>		
		<i>Protect and promote human rights?</i>		
<b>Please click in the relevant impact box or leave blank if you feel there is no particular impact.</b>				
<b>Personal Protected Characteristic</b>	<b>No/Minimum Impact</b>	<b>Negative Impact</b>	<b>Positive Impact</b>	<b>Please list details or evidence of why there might be a positive, negative or no impact on protected characteristics.</b>

<b>Age</b>	x			
Including children and people over 65 Is it easy for someone of any age to find out about your service or access your proposal? Are you able to justify the legal or lawful reasons when your service excludes certain age groups				
<b>Disability</b>	x			
Including those with physical or sensory impairments, those with learning disabilities and those with mental health issues Do you currently monitor who has a disability so that you know how well your service is being used by people with a disability? Are you making reasonable adjustment to meet the needs of the staff, service users, carers and families?				
<b>Gender</b>	x			
This can include male and female or someone who has completed the gender reassignment process from one sex to another Do you have flexible working arrangements for either sex? Is it easier for either men or women to access your proposal?				
<b>Marriage or Civil Partnerships</b>	x			
People who are in a Civil Partnerships must be treated equally to married couples on a wide range of legal matters Are the documents and information provided for your service reflecting the appropriate terminology for marriage and civil partnerships?				
<b>Pregnancy or Maternity</b>	x			
This includes women having a baby and women just after they have had a baby Does your service accommodate the needs of expectant and post-natal mothers both as staff and service users? Can your service treat staff and patients with dignity and respect relation in to pregnancy and maternity?				
<b>Race or Ethnicity</b>	x			
Including Gypsy or Roma people, Irish people, those of mixed heritage, asylum seekers and refugees What training does staff have to respond to the cultural needs of different ethnic groups? What arrangements are in place to communicate with people who do not have English as a first language?				

<b>Religion or Belief</b>	x			
Including humanists and non-believers Is there easy access to a prayer or quiet room to your service delivery area? When organising events – Do you take necessary steps to make sure that spiritual requirements are met?				
<b>Sexual Orientation</b>	x			
Including gay men, lesbians and bisexual people Does your service use visual images that could be people from any background or are the images mainly heterosexual couples? Does staff in your workplace feel comfortable about being 'out' or would office culture make them feel this might not be a good idea?				
<b>Transgender or Gender Reassignment</b>	x			
This will include people who are in the process of or in a care pathway changing from one gender to another Have you considered the possible needs of transgender staff and service users in the development of your proposal or service?				
<b>Human Rights</b>	x			
Affecting someone's right to Life, Dignity and Respect? Caring for other people or protecting them from danger? The detention of an individual inadvertently or placing someone in a humiliating situation or position?				
<b>If a negative or disproportionate impact has been identified in any of the key areas would this difference be illegal / unlawful? I.e. Would it be discriminatory under anti-discrimination legislation. (The Equality Act 2010, Human Rights Act 1998)</b>				
	<b>Yes</b>	<b>No</b>		
<b>What do you consider the level of negative impact to be?</b>	<b>High Impact</b>	<b>Medium Impact</b>	<b>Low Impact</b>	<b>No Impact</b>
				x



If the impact could be discriminatory in law, please contact the **Equality and Diversity Lead** immediately to determine the next course of action. If the negative impact is high a Full Equality Analysis will be required.

If you are unsure how to answer the above questions, or if you have assessed the impact as medium, please seek further guidance from the **Equality and Diversity Lead** before proceeding.

If the proposal does not have a negative impact or the impact is considered low, reasonable or justifiable, then please complete the rest of the form below with any required redial actions, and forward to the **Equality and Diversity Lead**.

**Action Planning:**

How could you minimise or remove any negative impact identified even if this is of low significance?

No negative impact

How will any impact or planned actions be monitored and reviewed?

How will you promote equal opportunity and advance equality by sharing good practice to have a positive impact other people as a result of their personal protected characteristic.

Please save and keep one copy and then send a copy with a copy of the proposal to the Senior Equality and Diversity Lead at [bsmhft.hr@nhs.net](mailto:bsmhft.hr@nhs.net) . The results will then be published on the Trust's website. Please ensure that any resulting actions are incorporated into Divisional or Service planning and monitored on a regular basis.

Please save and keep one copy and then send a copy with a copy of the proposal to the Senior Equality and Diversity Lead at [bsmhft.hr@nhs.net](mailto:bsmhft.hr@nhs.net) . The results will then be published on the Trust's website. Please ensure that any resulting actions are incorporated into Divisional or Service planning and monitored on a regular basis.





## Electrocardiogram (ECG) Service

Looking after your physical health

### What is an ECG?

An ECG is a painless test that measures the electrical activity of your heart.

### How long will it take?

Your appointment will take no longer than about 10 minutes.

### What will happen?

- You will be taken to the room by your ECG technician
- You will be asked to lie down on a bed and we will ask your name and date of birth.
- We will then need access to your chest, wrist and ankle area where small sticky electrodes will be placed onto your skin. These do not hurt and you will not need to be shaved.
- All you need to do at this point is relax as the ECG machine measure your heart rhythm.



### Will I have to undress?

No. You will not be asked to fully undress, we will only need access to your chest, wrists, and ankle area. We recommend a baggy shirt that allows us easier access. However we do use clean towels for you to cover up if needed.



### Why do I need to have an ECG done?

You may not realise it, but your physical health can also be affected by your mental health. In fact it has been proven that people with mental health problems are two to three times more chance from suffering from heart problems (British Heart Foundation).

This could be due to:

- Stress levels raising your heart rate.
- Medications that have been prescribed to you (ask your health care professional about the effects on your heart).
- General physical health problems
- If your family have a history of heart problem.

### Does an ECG hurt and are there any risks?

No. Your ECG is a completely pain free, non-invasive procedure with no risks associated. It will in no way affect your heart function, and could save your life by detecting any abnormalities before you have any symptoms.

### I'm pregnant, can I still have an ECG?

**Yes you can.** Your ECG trace will in no way effect your pregnancy or baby

### How can I reduce my chances of having a heart problems?

We understand that looking after your physical health can be tough especially when you are also dealing with mental health issues. We encourage you to talk to your health care team about any concerns that you have. There are some small steps that you can take to keep your heart healthy:-

- Stop smoking. From April 2016 we became a 'smoke free trust', you can speak to your health care team about getting help, or visit [www.nhs.uk/smokefree](http://www.nhs.uk/smokefree)
- Increase your daily activity, even a walk to the shops is a step in the right direction
- Improving your diet
- Reducing your alcohol intake
- Reduce high blood pressure
- Have your cholesterol levels checked
- Have good diabetes control



### What if there is a problem with my ECG Trace?

Your doctor will discuss your results at your next appointment, or you can contact your team by telephone who will review the best plan of action with you. In rare cases where the ECG technician picks up severe problems, an ambulance will be called for your safety.

### What we need to know at your appointment?

- Do you ever experience chest pains or discomfort in your chest?
- Do you ever have palpitations/ feel as though your heart is thumping in your chest?
- Do you ever feel short of breath or do you have asthma/COPD?
- Do you ever feel dizzy, weak or tired?
- Have you ever blacked out or lost consciousness?
- Have you ever had tingly sensations or pain in your left arm, both arms into your jaw or neck?
- Do you have trouble concentrating or feel confused?
- Do you have high or low blood pressure?
- Are you currently on any medications?

### Clinics across the trust

- Small Heath Health Centre, 1st and 3rd Monday of every month
- Orsborne House, Handsworth, 2nd and 4th Monday afternoons of every month
- Zinnia Centre, Sparkbrook, Tuesday mornings
- Newington Resource Centre, Marston Green, Tuesday mornings.
- Lyndon Centre, Solihull, on Tuesday afternoons of every month
- Barberry Centre, Edgbaston, 1st and 3rd Wednesday afternoons of every month
- Longbridge Community Health Centre, 2nd and 4th Wednesday afternoons of every month
- Northcroft, Erdington, Thursday mornings.
- Warstock Lane, Billesley, 1st and 3rd Friday mornings of every month

### ECG Service

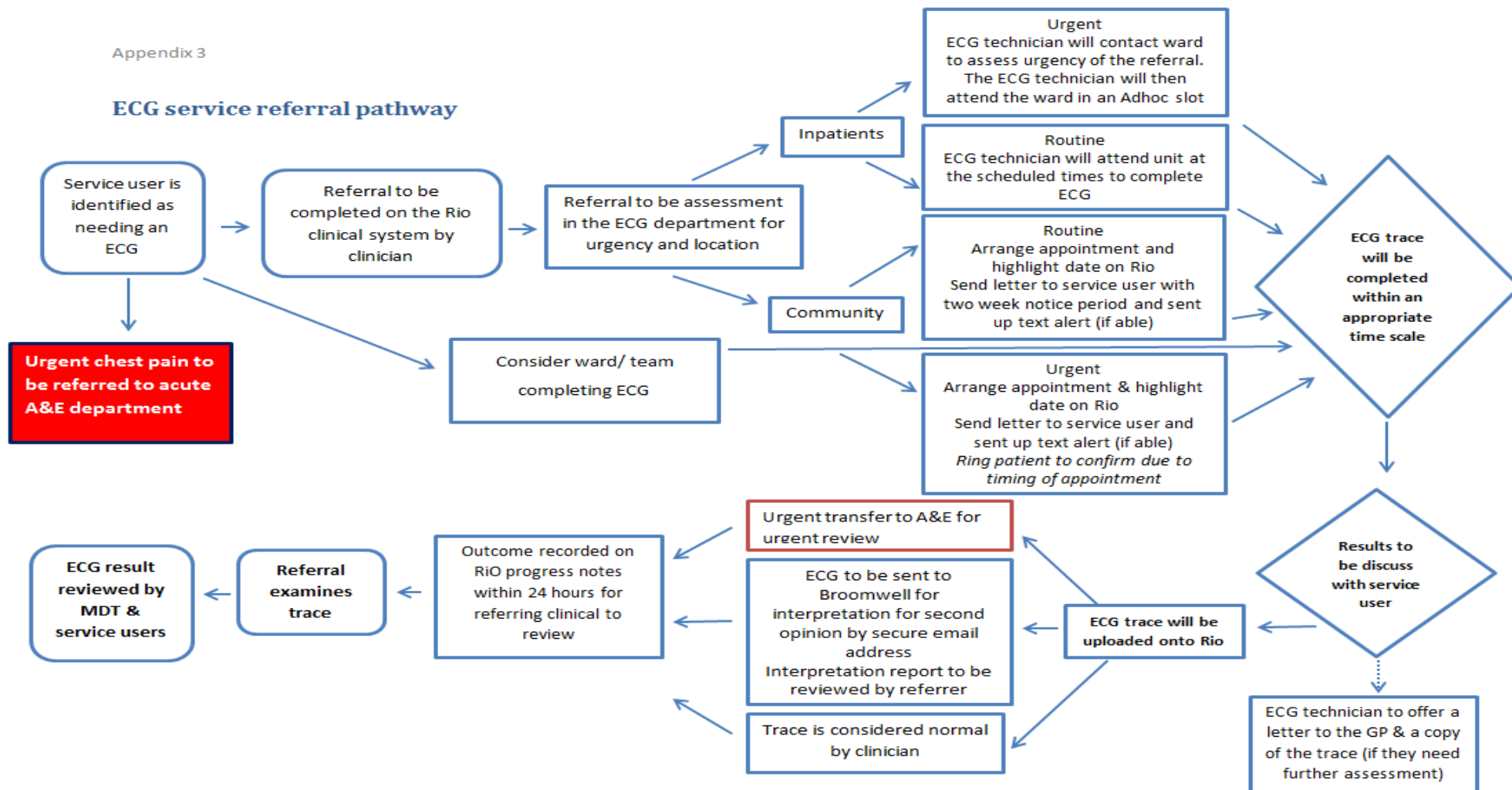
130 Hob Moor Road  
Birmingham  
B10 9JH

Tel: 0121 301 6646

[bsmhft.ecgservice@nhs.net](mailto:bsmhft.ecgservice@nhs.net)

Updated: May 2018

**ECG service referral pathway**



**Appendix 3**

Appendix 4



**Patient name**  
**Patient address**  
**Address**  
**Address**  
**Post code**

**ECG Service**  
**Newbridge House**  
**130 Hob Moor road**  
**Birmingham B10 9JH**  
**0121 301 6646**  
[Bsmhft.ecgservice@nhs.net](mailto:Bsmhft.ecgservice@nhs.net)

Date

Dear GP

ECG review

**Re: Patient Name** \_\_\_\_\_ **DOB** \_\_\_\_\_  
**Address** \_\_\_\_\_  
\_\_\_\_\_

Your patient attended \* \_\_\_\_\_ to have an ECG on \*\* \_\_\_\_\_  
I am writing to inform you of the results of this ECG.

**Reported Symptoms:**

**Results:**

**Advice:**

Yours Sincerely

*Name*  
**ECG Technician**  
**Contact Number**  
Encl

\* clinic attended      \*\* date of clinic

Chair: Danielle Oum | Chief Executive: Roisin Fallon-Williams | Website: [www.bsmhft.nhs.uk](http://www.bsmhft.nhs.uk)



## Appendix 5

### Service by Broomwell Healthwatch

Staff performing the interpretations will be experienced cardiology staff who are UK register and who have extensive experience in interpreting ECGs. All of the staff will have their ECG skills objectively assessed and all of them have all the ECGs that they have interpreted checked by a second clinician.

#### 1. Transfer of ECGs to Broomwell

ECGs should be sent to Broomwell by email or fax. Ideally ECGs should be sent by secure email. They should be sent from any nhs.net email address to Broomwell's dedicated nhs.net email address [ecg2.broomwell@nhs.net](mailto:ecg2.broomwell@nhs.net) this ensures that transmission is encrypted and secure

#### 2. Transfer of interpretation to back to the trust

Interpretation reports can be sent by secure email. Each time an ECG is sent to Broomwell the sender should confirm whether they prefer a response by email or phone, and which email or number they wish the interpretation report be send back to. When sent by email, Broomwell will send the report from there dedicated nhs.net address to the nhs.net address specified by the sender so that the email will be encrypted and secure. The format of the report file will be pdf which can easily be integrated into Rio.

#### 3. Reporting time

ECGs will be interpreted, reported on and sent back depending on the request of the referrer. If this is not recorded, Broomwell will consider them to being urgent.

Time scale	Cost per interpretation
<b>Routine (less urgent) interpretation are marked for weekend interpretation will be reported on and sent back by 9am on the next Monday</b>	£15.38
<b>Within 24 hours (overnight)</b>	£18.45
<b>Urgent - can be marked 'for immediate interpretation' will be reported on and send back with an average of 15-20 minutes (but no longer that 75minutes) If the sender wishes the interpretation to be done even quicker they can call Broomwell and request that and will be given a verbal interpretation whilst on the call and a written report within a few minutes</b>	£22.55

#### 4. Availability of Service

The service is available 24 hours a day, 365 days a year. The timeframes will be met at all times 24 hours a day, 365 days a year.

#### 5. The key performance indicators (KPI) dataset within Broomwell will include

- Quality controls of reading through random sampling of inter ratter reliability tests, twice a year with an external control to the organisation of up to 20 traces
- Random sampling of care records of patients schedules for ECG to ascertain turnaround of ECG undertaken to return of the report and trace into the care records.

#### 6. Contact details

Telephone number – 0161 236 0141

Email address for ECG reading – [ecg2.broomwell@nhs.net](mailto:ecg2.broomwell@nhs.net)

Postal address – Broomwell Healthwatch, Boulton House (7<sup>th</sup> Floor), 17-21 Chorlton Street, Manchester, M1 3HY

**Appendix 6  
ECG Interpretation Service**

**Broomwell Health Watch**

Email address for sending / receiving ECG traces

[ecg2.broomwell@nhs.net](mailto:ecg2.broomwell@nhs.net)

**Request for an ECG Interpretation with Broomwell**

By following Monday (routine)

Overnight – (24 hours)

**Urgent** – 75 minutes

(Please ring 0161 236 0141 to inform the service you need an urgent response)

**Please remember to attach the ECG Trace**

<b>Patient NHS Number</b>	<b>Patient Initials</b>	
<b>DOB</b>	<b>Age</b>	<b>M/F</b>
<b>Presenting symptoms and any known cardiac history</b>		
<b>Reason for ECG</b>		
<b>Current BMI</b>		
<b>Referrer details (this is the person the report will be sent too)</b>		
<b>Name *</b>		
<b>Contact Number*</b>		
<b>Emails address *</b>		
<i>(*required)</i>		
<b>Referred on behalf of :</b>		
<b>Date request made:</b>		

## Appendix 7

### 12 Electrocardiogram Price List

All MAC 800 parts can be ordered from GE Healthcare or Vyair via Integra.

<https://bmhlive.integrahosting.co.uk/eseries/esr.elogin>

Part Number	Description	Disc Price
38401816	Lead wire Set/10, 4 mm Banana connector, 70-130 cm, IEC (care fusion)	128.00
22341808	Cable, ECG, Multi-Link 10-Ld, MAC 800/1200/1600/2000 IEC, 2.2m (care fusion)	88.00
2066867-010	ECG Wide-Mouth Clip, Mactrode, 10/pkg – CF (care fusion)	16.00
2039944-001	MAC800 FRU BATTERY ASSEMBLY (GE Healthcare)	£102.40 +vat
2036970-001	Z-fold, perforated thermal paper for MAC 800, 10 packs/case (GE Healthcare)	£37.00 +vat

The following can be ordered from NHS Supply chain.

<http://my.supplychain.nhs.uk/catalogue>

Skin tact Electrodes	FDK244	NHS Supply Chain
Electrodes	FDK061	NHS Supply Chain
ECG Paper	FDI250	NHS Supply Chain



# Patient and room preparation

## Patient experience, privacy and dignity

- A key goal of good practice is to ensure the service user has a positive experience of the procedure. Good communication skills are a key part of enhancing the patient's experience of the investigation.

## Level of undress

- Technicians will make every effort to respect the cultural sensitivities of the service user and to minimise embarrassment. Many people will feel uncomfortable being touched on their upper torso; therefore they will be sensitive to this and act in a sympathetic, caring and compassionate manner
- The service user will be asked to undress above the waist to allow access to the upper torso for accurate electrode placement. They will be allowed to undress in a private environment with minimal risk of interruption. Once the electrodes have been attached they will be covered with a towel (or their own shirt) to preserve modesty.

## Chaperones

- Service users will always be given the option to have a chaperone present. The chaperone may be a relative or carer if requested. Under 18 years old will always be chaperoned

## Room Preparation

As far as possible the environment should be:

- Private: walled, curtained or screened
- Quiet
- Accessible for disabled and able-bodied service users
- Safe
- Clean with appropriate hand-cleaning and clinical waste facilities
- Furnished with a height adjustable couch in a easily assessable position
- All main leads, cables and connectors should be intact with no evidence of fractures, faults or insulation damage
- Have an adequate supplies of electrodes, paper, spare crocodile clips, tissues and alcohol wipes

## Infection control

- All measures to control the risk of infection transmission must be taken in accordance with trust policy
- Hands will be washed with soap and water or cleansed with alcohol gel before and after any contact with a patient.

- For patients requiring high level of infection control precautions, personal protective equipment such as gowns and gloves will be worn
- Appropriate clinical waste disposal facilities should be available including sharps bins.

### For Home visits

- Since the service user is required to remove their upper clothing it is important that the area is one which takes into account of the need to respect their modesty and privately
- The procedure is in an area with enough room to move around.
- There should ideally be hand washing facilities or if this is not possible alcohol gel available.
- The technician has communicated with the community team to assessed the risk in attending the home to undertake the procedure
- The ECG machine should be transported safely in the boot of a car.

## Appendix 9

# The procedure for Recording a 12 lead ECG

### Preparation of the patient

A calm confident manner is needed by the health professional recording the ECG as the patient may be anxious or distressed.

Explain the procedure to the patient to obtain their consent, if necessary an interpreter should be booked who can communicate in the required language, including BSL.

Offer the patient a chaperone or escort as the patient's torso will be exposed during the 12 lead ECG recording. Ensure that the service users' dignity is maintained at all times. If the service user objects to the gender of the clinician a suitable alternative must be found.

Position the patient flat with a pillow, if tolerated. Alternatively place the patient semi-recumbent. Document the patients' position on the ECG.

Maintain the patient's privacy and dignity at all times.

Check that the machine is calibrated and all the necessary equipment is present.

Check the calibration mark is 2 large squares in height (once ECG recorded).

Unless specifically stated by the requesting medic/nurse, ensure the ECG recording machine speed is set at 25 mm/sec.

Ensure the ECG recording machine gain is set at 10 mm/mV.

Ensure the same brand of electrodes is used on individual patients.

Skin must be clean and dry to reduce the resistance between the patient and the ECG machine. Skin can be cleaned with an alcohol wipe, or washed with mild soap and water, ensuring the skin is completely dry. (This will increase adherence of the electrode to the skin as there must be firm contact between electrode and skin.) Note that if an alcohol wipe is going to be used - the patient must be asked about any sensitivity.

The removal of chest hair may be required by clipping the hair using disposable scissors to ensure adequate contact with the skin. Verbal consent should be obtained from the patient. Hair must not be shaved.

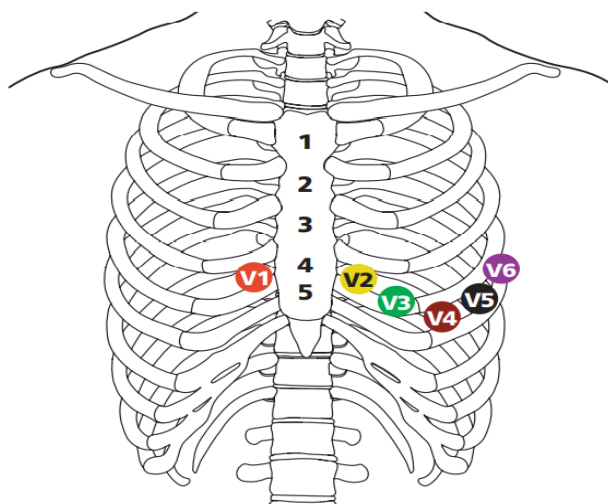
The patient will be advised to remove their watch as it can contribute to interference on the ECG recording.

### Placement of Electrodes – Limb Leads

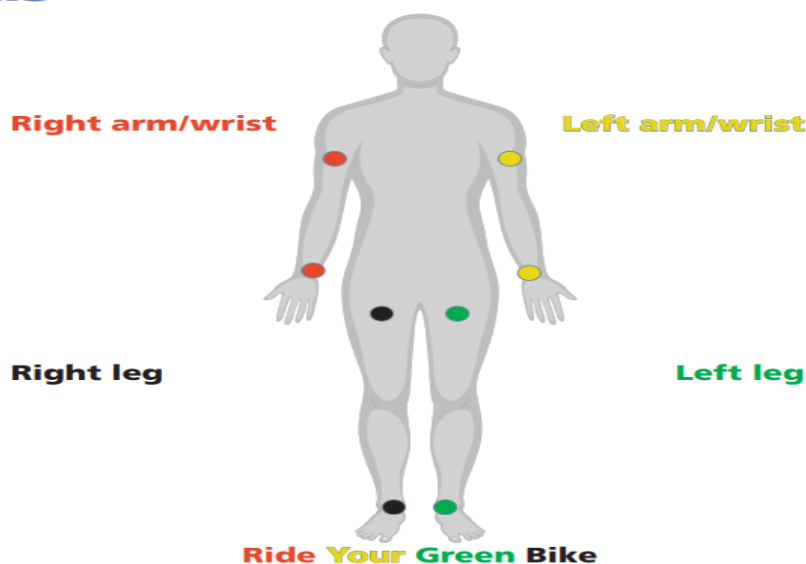
## The 12 lead ECG position

There are 6 chest electrodes:

- V1** – 4<sup>th</sup> intercostal space, right sternal edge
- V2** – 4<sup>th</sup> intercostal space, left sternal edge
- V3** – halfway between V2 and V4
- V4** – over the apex, 5<sup>th</sup> intercostal space, mid-clavicular line
- V5** – at the same level as V4 but on the anterior axillary line
- V6** – at the same level as V4 and V5 but on the mid-axillary line



## Limb leads



## Recording the ECG

Ensure patient is relaxed and comfortable in order to record a good quality ECG. If patients are not relaxed the recording will show somatic muscle potential as well as cardiac activity.

If the recommended ECG recording technique has been adapted e.g. wheelchair users may need to remain in their chair during the recording process, then this must be documented on the ECG trace.

All the service user's details should be entered accurately in the ECG machine. For the initial ECG recording the filter button should not be selected. If despite efforts to make the patient relaxed and comfortable there is somatic muscle interference on the ECG then switch on the filter button and repeat the ECG. Note: the filter will reduce the interference, however it can distort the ECG, and it should only be used when absolutely necessary after all attempts have been made to eliminate the interference.

## After the ECG

Remove all electrodes after obtaining the ECG recording.  
Correctly label the ECG with patient details.

Explain to the service user with how soon they will be notified of the results.  
Ensure the information relating to the ECG and any conversation had with the service user about the ECG is documented in progress notes of Rio as soon as possible but no more than 24 hours after the event.

The trace will be uploaded onto Rio (in clinical documents) so the referring clinician or medical team can decide upon appropriate action. The referring clinician can consider sending for interpretation if unable to recognise the rhythm or have concerns.