Extract from Establishment Order SI No. 109 of 2000 and Amendment Order SI No. 575 of 2004

Article 4. The functions of the Council shall be to:-

(q) prepare standards of operation for pre-hospital emergency care service providers to support best practice by pre-hospital emergency care practitioners.

The statutory ambulance services provide a response, following a 112 call for a clinical incident, to a heterogeneous population of patients with undifferentiated health problems. These present with variable clinical acuity ranging from life-threatening emergencies to the complex health problems of an ageing population and minor injuries or illnesses. The function of priority dispatch therefore is to priorities the incident and to arrange the appropriate response for the patient's clinical needs.

Time based standards have been used as a key performance measure for ambulance services both nationally and internationally, despite a lack of evidence that they actually lead to good clinical care. None of the available evidence has demonstrated any positive relationship between shorter response times and a decrease in mortality across all emergency patients or those with life threatening conditions other than out of hospital cardiac arrest.[1] Over prioritising of incidents has resulted in inefficient use of resources and under prioritising of incidents has resulted in delayed responses.[2] The aim therefore is to ensure that patients receive the right care, at the right time, at the right place.[3]

The PHECC standards will therefore focusing on evidence-based standards which include Irish data, when available. Cardiac arrest is the highest level of priority encountered and is time critical. The Out-of-Hospital Cardiac Arrest Registry (OCHAR) is the primary source of cardiac arrest data in Ireland and will be utilised to inform an appropriate response to this clinical emergency. For OCHAR reported cardiac arrests with an Echo DCR code an average of 44% (range 0.9% to 100% per code) of incidents for 2017 and 2018 were actual cardiac arrests. An additional 10% of Echo DCR codes allocated to incidents did not result in cardiac arrests. Also, of the life-threatening (Delta) codes utilised, where a cardiac arrest resulted, 0.7% (range 0.06% to 100% per code) were actual cardiac arrests. With the introduction of the e-PCR a broader data source will now be available to inform priority dispatch decisions.

1. Objectives

1.1 To provide a clinically appropriate response by targeting the correct resources for the patient.
1.2 To outline the process for prioritisation of emergency medical assistance (112) calls.
1.3 To specify the response to each level of priority.
1.4 To outline the principles of dispatch.
1.5 To outline the process for managing the dispatch cross reference (DCR) table.
1.6 To specify key performance indicators for dispatching.

[1] Janette Turner et al, 2017, Ambulance Response Programme Evaluation of Phase 1 and Phase 2 Final Report, School of Health and Related Research, University of Sheffield.
[2] Jim Ward et al, 2019, Scottish Ambulance Service, Clinical Response Model Pilot Evaluation Report.
[3] Ambulance Victoria, 2017, Delivering our patients the right care, at the right time, at the right place, Revised Clinical Response Model Evaluation Report.

2. Emergency call handling times

Call handling timestamps are designated at specific time periods within the call handling process see table 1

Table 1, Call handling time stamps

<table>
<tr><th>Time 0</th><th>Time 1</th><th>Time 2</th><th>Time 3</th><th>Time 4</th><th>Time 5</th><th>Time 6</th></tr>
<tr><td>Call connection</td><td>Open new incident in CAD</td><td>Verify address of incident</td><td>Identify possible cardiac arrest</td><td>Identify chief complaint/ nature of call</td><td>Select DCR code</td><td>Exit system</td></tr>
<tr><td colspan="4">60 seconds</td><td colspan="3"></td></tr>
<tr><td colspan="4"></td><td colspan="3">Cardiac arrest response clock start</td></tr>
<tr><td colspan="6">180 seconds</td><td></td></tr>
<tr><td colspan="6"></td><td>All other incidents response clock start</td></tr>
</table>

3. Emergency call taking

Calls received for emergency medical assistance through the 112 emergency call system shall be prioritised using a software assisted interrogation process, currently ProQA from Advanced Priority Medical Dispatch System (AMPDS). The prioritisation process shall result in a determinant code which is constructed from three components and some codes may have a fourth component;

3.1 **Protocol number**: a number from 1 to 32 indicating a specific clinical presentation or a number > 32 indicting a specific request for ambulance transport. The list is published separately in Annex A.

3.2 **Determinant level**: a letter (E, D, C, B, A and Ω) which indicate the priority level of the incident.

3.3 **Determinant number**: a number, commencing at 1, listing in order of decreasing priority.

3.3.1 **Suffix**: A letter indicating a condition associated with the incident i.e. s = stab, g = gunshot.

For each protocol number (i.e. 01 Abdominal Pain/Problems) there may be up to six determinant levels (i.e. Delta) and within each determinant level there will be one of several determinant numbers (i.e. 1 not alert), depending on the requirements for that particular protocol. The determinant levels do not necessarily indicate the severity of the incident but indicate the agreed PHECC response to an incident. When a determinant code has been allocated by the call-taker the incident shall be made available to the dispatcher clearly indicating the response priority level.

4. Dispatch Cross Reference Table

The Dispatch Cross Reference Table is the table where the determinant codes are stored. The DCR table is published separately by PHECC under STN008. The determinant codes are listed in alpha/numerical order with Ω placed before A. Each determinant code shall have a response assignment allocated to it. These shall be colour coded and are in descending priority order, see Figure 1.

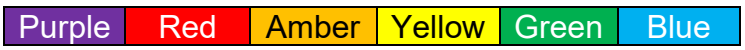

Figure 1 Determinant codes

The primary response to each of the six determinant levels is outlined in table 2. Each determinant code shall also specify, where appropriate, call taker prompts, dispatcher prompts, and additional resources required. See Appendix 1 for details.

The DCR table shall be agreed by the Priority Dispatch Committee and the Director, through delegated authority from Council, shall approve it.

5. Dispatch standards

The principles for dispatchers shall be applied when dispatching resources to an emergency medical incident.

5.1 Principles for dispatchers

5.1.1 The nearest available resource shall be tasked to a Purple (cardiac arrest) determinant without delay.[4]

5.1.2 The nearest available paramedic ambulance shall be tasked to a Purple, Red or Amber determinant in that priority order.

5.1.3 Call-takers and Dispatches shall have discretion to override a determinant and assign a higher priority to an incident based on the information received.

5.1.4 An ambulance tasked to lower priority incident may be diverted to higher priority incident when resources are limited.

5.1.5 The Dispatcher may preserve the availability of ambulances by queuing Green and Blue determinants until sufficient resources are available.

5.1.6 An EMT ambulance may be deployed for Yellow, Green and Blue determinants but not at the expense of their primary role, patient transport.

5.1.7 When a response is delayed Call-takers / Dispatchers shall inform the caller of their priority rating (high, medium or low)[5] based on current activity.

5.1.8 Contact shall be made with the caller if the response is delayed (> 20 minutes) for Red and Amber determinants to verify patient's condition and review priority of the incident.

5.1.9 Any recommended resource should only be tasked if it has a reasonable expectation of making patient contact. Tasking a resource to an incident to

[4] Peter McLoone et al, 2018, OUT-OF-HOSPITAL CARDIAC ARREST STRATEGY FOR IRELAND, Putting Survival at the Heart of the Community

[5] Priority ratings: High = Purple or Red, Medium = Orange or Yellow, Low = Green or Blue

strictly meet control time targets when knowingly aware that that the resource is highly unlikely to make patient contact is not acceptable practice.

Table 2, EMS Response

Determinant	Definition	Minimum response requirement	Response	Further extra response	Other resources
Purple	Life threatening – Cardiac or respiratory arrest	BLS[6] capabilities on scene: Median < 6 minutes with 90th percentile under 15 minutes	Paramedic transporting vehicle on scene <19 minutes. Practitioner with ALS capability. Ensure 3/4 responders/practitioners on scene.	Ambulance Officer according to operational requirements	HEMS, Fire Service, Garda, Coast Guard, Utility services as required
Red	Life threatening other than cardiac or respiratory arrest	EFR capabilities on scene: Median < 7 minutes with 90th percentile under 15 minutes	Paramedic transporting vehicle on scene <19 minutes Practitioner with ALS capability for specified DCR codes	Ambulance Officer according to operational requirements	HEMS, Fire Service, Garda, Coast Guard, Utility services as required
Amber	Serious not life threatening – Requiring urgent treatment to relieve symptoms and/or time critical transport	Paramedic transporting vehicle on scene <19 minutes	Practitioner with ALS capability for specified DCR codes	Ambulance Officer according to operational requirements	HEMS, Fire Service, Garda, Coast Guard, Utility services as required
Yellow	Non serious or non-life threatening – Requiring treatment to relieve symptoms	Median under 60 minutes with 90th percentile of 90 minutes	EMT transporting vehicle on scene < 60 minutes Paramedic for specific DCR codes	Ambulance Officer according to operational requirements	HEMS, Fire Service, Garda, Coast Guard, Utility services as required
Green	Non serious or non-life threatening – Minimal interventions required	Median under 120 minutes with 90th percentile of 150 minutes	EMT transporting vehicle on scene < 120 minutes	Ambulance Officer according to operational requirements	HEMS, Fire Service, Garda, Coast Guard, Utility services as required
Blue	Minor illness or injury	Divert call to clinical hub or response within 180 minutes	Appropriate clinical advice or clinical response <180 minutes	Ambulance Officer according to operational requirements	Community practitioner, Fire Service, Garda, Utility services as required

[6] The ability to perform Basic Life Support (BLS) is defined as having access to a defibrillator, the training to both perform cardiopulmonary resuscitation (CPR) minimum CFR.

5.2 Dispatch on Disposition

To identify cardiac arrest as soon as possible after answering the 112 call the call-taker shall be cognisant of key words that suggest cardiac arrest and if any are identified a Purple response should be initiated immediately. If at any stage during the interrogation of the caller a cardiac arrest is suggest/ possible a Purple response should be initiated immediately. For all other incidents the call-taker should complete a thorough interrogation prior to allocating a definitive DCR code. This timeframe has been extended to 180 seconds to facilitate this process. See table 1.

6. Clinical Support Desk

A Clinical Support Desk shall be established to facilitate clinical advice for call-takers, dispatchers, practitioners and callers to ambulance control. The Clinical Support Desk(s) shall be manned with appropriately qualified clinical staff 24 hours per day. The clinical qualifications and training for the clinical support desk personnel shall be outlined in Annex B.

The Clinical Support Desk shall have three primary functions;

6.1 **Hear and Treat**. Calls categorised as Blue determinants should be transferred to the Clinical Support Desk for additional triaging prior to deciding on an appropriate response. The aim of Hear and Treat is to give advice to the caller/patient with any appropriate action being agreed with no further response required from the ambulance service. Appropriate action may include telephone advice and designating or referral to an appropriate service such as GP, GP Out of Hours Service, ED, Injury Unit, Pharmacy, etc.

6.2 **Clinical Screening**. Appropriately qualified practitioners shall monitor and screen incidents for acuity where additional clinical skills are required for the presenting condition. Additional clinical resources may be deployed to the scene based on the clinical screening. This is in keeping with recommendation 17 of the Trauma System for Ireland report[7] and findings of the Scottish Ambulance Service[8].

6.3 **Clinical Advice.** Unusual patient presentations make it impossible to develop a Clinical Practice Guideline (CPG) to match every possible clinical situation. Consultation with the Clinical Support Desk in challenging clinical situations is strongly advised. The practitioner must provide care in the best interest of the patient. Clinical advice may be given under three conditions;

6.3.1 When the treatment is within the scope of practice of the practitioner. This may be a presentation not specified on a CPG that a medication and/or an intervention (within their scope of practice) would be beneficial to the patient. This includes exceeding the maximum dose of a specific medication as prescribed on a CPG.

[7] McGovern, E. (2018). A Trauma System for Ireland, Department of Health.
[8] Sinclair, N., et al. (2018). "Clinician tasking in ambulance control improves the identification of major trauma patients and pre-hospital critical care team tasking." Injury **49**(5): 897-902.

6.3.2 When the treatment is not within the scope of practice of the practitioner. Practitioners on the Clinical Support Desk may authorise a clinical intervention that is not within the scope of practice of the practitioner on scene, provided that the intervention is time critical and no other practitioner is available to do so in a timely manner. These interventions may include basic tactical emergency care (BTEC) interventions.

6.3.3 When a Call-taker or Dispatcher requires support with clinical decision making. The AMPDS system focuses on 32 clinical presentations and five operational processes when triaging emergency incidents. Unusual presentations may result in difficulty with triage or other clinical decisions. Call-takers and Dispatchers may confer with the Clinical Support Desk for assistance with clinical decision making.

7. Assistance and/or advice for non-statutory ambulance service practitioners

Periodically, non-statutory ambulance service practitioners will contact ambulance control for assistance and/or advice. This may be in the form of a request for a higher clinical level to provide care beyond the scope of practice of the practitioner on scene or advice on the appropriate destination for a specific presentation i.e. stroke, within a geographical area. The ambulance control centre to set up an 1800 number to facilitate direct contact without going through the 112/999 system for non-emergency communication.

On receipt of such a call the call-taker should;

7.1 Verify the bona fide of the practitioner by requesting their PHECC PIN, clinical level and the licensed CPG provider they are acting on behalf of.

7.2 If cardiac arrest advise to continue resuscitation and await ALS.

7.3 Establish if the patient is packaged and in an ambulance.

7.3.1 If **yes**; do not delay patient transport (except for 2 above). Estimate the journey time to the receiving facility and the likelihood of a timely rendezvous with a higher clinical level and make an appropriate decision based on these timeframes.

7.3.2 If **no**; establish the nature of the assistance and/or advice required and respond/react accordingly.

8. Data sharing

This PHECC standard is dependent on access to de-identified data for successful implementation.

8.1 Licensed CPG providers operating an emergency medical control centre and dispatching PHECC registered practitioners to emergency medical incidents shall share de-identified data with PHECC.

8.2 Each licensed CPG provider, as described in 8.1, shall agree a process with PHECC for a timely and accurate sharing of the required data.

Appendix 1 DCR Table

Definitions:
Dispatch Cross Reference (DCR): the code allocated by the AMPDS software to identify a specific complaint/set of symptoms.

Priority Response: the designated instruction to the responding practitioners/responders in relation to the urgency and type of response, i.e. Purple, Red, Amber, Yellow, Green & Blue.

DCR table rules:

1 The current version of the DCR table as issued by PHECC shall be utilised.
2 A Purple determinant is defined as 'patients with cardiac or respiratory arrest'.
3 A Red determinant is defined as 'patients, other than a Purple determinant, requiring an airway, breathing or circulation intervention, a level of consciousness below Alert and requires a medication administered >10% of incidents.
4 An Amber determinant is defined as 'patients other than Purple or Red determinants requiring urgent treatment to relieve symptoms and/or time critical transport'.
5 A Yellow determinant is defined as 'patients other than Purple, Red or Amber determinants requiring treatment to relieve symptoms.
6 A Green determinant is defined as 'patients other than Purple, Red, Amber or Yellow determinants where minimal interventions are required'.
7 A Blue determinant is defined as 'patients other than Purple, Red, Amber, Yellow or Green determinants where a minor illness or injury is identified'.

DCR codes shall be reviewed annually
The default response determinants shall be utilised until Irish data is available to inform decision making. The Priority Dispatch Committee shall, using the protocols below, allocate a clinically appropriate response determinant from Irish data.

a) **Purple** priority determinant shall be applied to all DCR Echo codes and all other determinant codes where a patient had, following a retrospective review from the previous year, a > 10% incidence of either being in cardiac arrest on arrival, or an EMS witnessed cardiac arrest for that DCR code.

b) **Red** priority determinant shall be applied to all DCR determinant codes where a patient, following a retrospective review from the previous year of individual DCR codes;
(i) had a > 1% and ≤ 10% reported cardiac arrest on arrival (or an EMS witnessed cardiac arrest)
(ii) required an airway, breathing or circulation physical intervention
(iii) required the administration of a medication (other than OTC analgesia) for > 10% for specific DCR codes
(iv) required a pre-alert to ED

c) **Amber** priority determinant shall be applied to all DCR determinant codes where a patient, following a retrospective review from the previous year of individual DCR codes;
   (i) did not meet the Red determinant criteria despite having a Delta code.
   (ii) had a < 1% incidences of reported cardiac arrest on arrival (or an EMS witnessed cardiac arrest)
   (iii) default determinant when cardiac arrest < 0.1%.
   (iv) required the administration of a medication (other than OTC analgesia) for ≥ 1% and ≤ 10% for specific DCR codes

Default determinant codes shall apply to all DCR codes that have never been utilised. Also, all DCR codes with serious haemorrhage in its description to remain at the default priority determinant and that an 'operational protocol' is included to read "**For uncontrolled bleeding override to Delta priority determinant**".

Default determinant codes shall apply outside this protocols unless;
a) A specific time critical intervention requires a higher priority response.
b) All 'override' codes to remain at the default priority determinant unless other rules apply.
c) For safety and to ensure ambulance access to road traffic collisions (RTCs) all Chief Complaint 29 codes with Blue or Green priority determinants shall be upgraded to a Yellow priority determinant if a vehicle is being dispatched.

Advanced Paramedic deployment
Deployment of a practitioner with advanced life support (ALS)[9] capabilities should be initiated if one or more of the cardiovascular, respiratory or neurological systems are acutely compromised following a traumatic or medical emergency or when clinical leadership is required on scene. The PHECC Medications and Skills matrix may be used as a template to identify medications and or skills that are limited to the scope of practice of an advanced paramedic.

AP Advised
For DCR codes with 'AP Advised' there is a requirement to deploy an AP to the incident, when available.

Advanced paramedics shall be deployed to
- Echo category response codes (cardiac or respiratory arrest).
- Delta category response codes where the scope of practice required is greater than that of a paramedic.
- Specified Charlie category incidents on the DCR table.
- Multiple patient incidents (consider AP deployment).
- Requests received from an EMT or Paramedic for ALS support.

[9] Advanced Life Support (ALS) is provided when a practitioner or healthcare professional is on scene and has equipment and medications available to provide care to a minimum of the PHECC Advanced Paramedic (AP) level.

Additional deployment of APs
There is no requirement to deploy an AP to an incident other than as described in 'AP Advised' above, however if an AP is available and not required for AP Advised responses then an AP may be dispatched at the discretion of the Dispatcher.

EMT ambulance deployment
An EMT ambulance, crewed with two EMTs, may be deployed for Blue, Green and specific Yellow determinants but not at the expense of their primary role, patient transport. An ongoing audit shall be conducted to determine numbers of escalation to paramedic/ advanced paramedic requirements when an EMT ambulance arrives on scene for Blue, Green and Yellow determinants. This audit to be reported to the Priority Dispatch Committee.

Cardiac First Response deployment

1 All Purple determinants, except where hazards, trauma care or do not attempt resuscitation (DNAR) may beyond the scope of practice of CFRs
2 Determinant code 10 Chest Pain, when the CFR is likely to respond to the scene in advance of any NAS/DFB resources and
2.1 where the call taker has established that the caller/patient does not have aspirin, or
2.2 a probability of arrest (identified by the DCR codes listed below):
- 10C02 'Chest Pains, Heart Attack or Angina history'
- 10D01 'Not alert with Chest Pains'
- 10D04 'Clammy with Chest Pains'

Emergency First Response deployment

Responders (minimum EFR); if ambulance is delayed (> 19 minutes) consider EFR deployment for all Red determinant codes.

Table 3, Flu Pandemic (Protocol 36)

36 Flu Pandemic		Agreed with HSE National Influenza Pandemic Management Committee and approved by Council 31/01/2013					
Activated	**Description**	Purple	Red	Amber	Yellow	Green	Blue
Medical Director instructions	Flu pandemic **level 1**	Standard response	Standard response	Standard response	Standard response	Standard response	Advise stay in bed and take Paracetamol
Medical Director instructions	Flu pandemic **level 2**	Standard response	Standard response	Standard response transport to flu centre	Standard response transport to flu centre	Advise stay in bed and take Paracetamol	Advise stay in bed and take Paracetamol
Medical Director instructions	Flu pandemic **level 3**	Standard response	Standard response transport to flu centre	Advise make own way to flu centre	Advise make own way to flu centre	Advise stay in bed and take Paracetamol	Advise stay in bed and take Paracetamol

Notes
1. Standard response refers to standard response of ambulance service without flu pandemic

2. It is anticipated that as the pandemic worsens the HSE will set up flu centres to keep acute hospitals clear

Notes

1. Changes to this table are subject to HSE agreement.

Table 4, Emergency interfacility transfer (Protocol 37)

Protocol 37 Emergency Interfacility Transfer for Model 3 and 4 hospitals							
Activation	**Description**	Purple	Red	Red	Red	Red	Omega
CNM, Registrar or Consultant	Transport for time critical clinical procedure	Not applicable	Immediate response	Response within 30 minutes	Response greater than 30 minutes but within 60 minutes	Response greater than 60 minutes	Not applicable
Vehicle type		N/A	EMT or Paramedic ambulance	EMT or Paramedic ambulance	EMT or Paramedic ambulance	EMT or Paramedic ambulance	N/A
Crew type for **Model 3 or 4** hospital transports	Clinical care will remain the responsibility of the transferring hospital	N/A	EMT	EMT	EMT	EMT	N/A
Crew type for **Model 2** hospital transports	Without medical and/or nursing team travelling	N/A	Paramedic	Paramedic	Paramedic	Paramedic	N/A

Notes

1. Interfacility transfer is defined as a patient transfer between any two model 3 or 4 hospitals.
2. Protocol 37 may only be used for a time critical procedure available only at another hospital.
3. In general an EMT ambulance will be used for protocol 37 transfers with the referring hospital to supply a medical team and all medications, if required.
4. The Advanced Paramedic role is not for interfacility patient transfer.
5. A Model 2 hospital may have a clinical team available, however, should ALS be required it may be organised through the control manager.

Table 5, Protocol 37 Interfacility Patient Transfer for Model 3 and 4 hospitals

Action	Call taker response	Outcome
999 request for emergency interfacility patient transport	Verify; caller is CNM, registrar or consultant	Yes – proceed with call taking No – decline request (advise caller of protocol)
	Confirm; referring hospital, phone No, ward and patient's details	Record details on CAD
	Confirm; primary clinical condition for which Transport is required	Record details on CAD
	Confirm; Receiving hospital, ward and consultant.	Record details on CAD
	Confirm; timeframe for response (immediate, 30 min, 60 min or > 60 min)	Record details on CAD
	Verify; are medical/ nursing team travelling	Yes – record details on CAD No – identify clinical level required and record details on CAD.
Decide on response code	Allocate Delta, Charlie, Bravo or Alpha	Pass call to dispatcher.

Configuration special definitions

9 Cardiac respiratory arrest/death

9 B Obvious death unquestionable

Activate	Description
No	Cold and stiff in a warm environment
Yes	Decapitation
Yes	Decomposition
No	Incineration
Yes	Non recent death > 6 hours
Yes	Severe injuries incompatible with life
Yes	Submersion > 6 hours

9 B Expected death

Activate	Description
No	Terminal illness
No	DNAR

24 Pregnancy/ Childbirth/Miscarriage

24 D5 High risk complications

Activate	Description
Yes	Premature birth > 20 < 36 weeks
Yes	Multiple birth > 20 weeks
Yes	Bleeding disorder
Yes	Blood thinners
Yes	Known placenta praevia
Yes	Cervical cerclage (stitched in)
Yes	Female genital mutilation (FGM)

24 O1 Referral

Activate	Description
Yes	Waters broken (no contractions or presenting parts)

Abort Reasons for ProQA

Caller hung up
Hoax call
Test call
System failure
Duplicate incident

Health Care Practitioner in attendance ambulance not required
Health Care Practitioner in attendance caller hung up
Patient refuses questioning
Caller refuses questioning
Non Emergency Medical Services incident

Pre arrival instructions

Telephone assisted CPR: - Compression only CPR advise
Choking
Childbirth
Haemorrhage control
Aspirin protocol