

**DATA DICTIONARY TO ASSIST WITH
IMPLEMENTATION OF
‘A QUALITY FRAMEWORK & SUITE OF
QUALITY MEASURES FOR THE EMERGENCY
DEPARTMENT PHASE OF ACUTE PATIENT
CARE IN NEW ZEALAND’**

ADAPTED FROM THE SHORTER STAYS IN EMERGENCY DEPARTMENTS NATIONAL RESEARCH PROJECT

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Preface:

This data dictionary was originally developed to provide a systematic protocol for quality indicator data collection, at four study sites, in stream two of the Shorter Stays in Emergency Departments National Research Project.¹

This particular amendment (V8.2) is for use in New Zealand District Health Boards (DHBs) as an aid to implementing "A Quality Framework and Suite of Quality Measures for the Emergency Department Phase of Acute Patient Care in New Zealand" (the Quality Framework).² The Quality Framework is to be implemented by all DHBs in New Zealand from the beginning of the 2014/2015 financial year.

At a forum to discuss this implementation in May 2014, DHB representatives expressed a desire to see examples of definitions and tools. This dictionary is provided so that definitions and some associated tools are available to DHBs to use, to modify for their own purposes, or to inform the development of their own definitions and tools. It is the explicit intention during the implementation of the Quality Framework that detailed definitions of quality measures, or specific measurement tools are not mandated (with the exception of the Shorter Stays in ED Target – see below). This is so that the implementation burden for DHBs is not made worse by a need to comply with details of a definition which don't suit local practice or measurement.

As this dictionary had its origins in the methodology of a rigorous research project there is a consequent high level of detail and comprehensiveness of the definitions. For the purposes of internal quality improvement (which is the aim of the Quality Framework) such detail and comprehensiveness might not be required. To this end DHBs should use this dictionary to inform their own locally relevant definitions. However, the evolution towards common definitions and tools is encouraged. As well as providing assistance with the development of local definitions this dictionary will encourage standardisation, consequently allowing benchmarking between DHBs and the determination of acceptable performance standards. To this end DHBs are encouraged to use this dictionary. Similarly, DHBs are encouraged to share their own definitions and tools on the HIIRC website.

It should be noted that the definitions relating to the Shorter Stays in the ED health target – what it means, which patients are included, when the time starts and when it stops, etc. must be adhered to for the purposes of reporting performance against this target to the Ministry of Health. These definitions are found in the target definitions document.³

Finally, the document; 'A Quality Framework and Suite of Quality Measures for the Emergency Department Phase of Acute Patient Care in New Zealand'² (the Quality Framework), provides comprehensive discussion of the context of these quality measures and the expectations of implementation. This data dictionary supplements the Quality Framework and should be used in conjunction with it.

The quality indicators developed for use in NZEDs have been categorised into five groups based on the Quality Framework document.

1. **Clinical Profile Indicators:** “the bulk of quality measures expected to be measured continuously or regularly. DHBs are expected to measure and monitor data by ethnicity, observe trends and make improvements where required.”
2. **Education and Training Profile:** “EDs should be involved in education and training relevant to the needs of their staff”.
3. **Research Profile:** “ideally departments should be involved in research relevant to emergency medicine and nursing. Research should identify disparities and trends by ethnic groups and should build an evidence base for best practice for Maori, Pacific and other population groups”.
4. **Administration Profile**
5. **Professional Profile**

This data dictionary will focus on definitions for the **clinical profile indicators** in the following groups:

- Patient Journey Time Stamps
- ED Overcrowding Measures
- ED Demographic Measures
- ED Quality Processes
- Patient Experience Measures
- Clinical Quality Audits
- Documentation and Communication Audits
- Performance of Observation Ward/Short Stay Units

General References:

- A Quality Framework and Suite of Quality Measures for the Emergency Department Phase of Acute Patient Care in New Zealand²
- College of Emergency Medicine (CEM UK): Emergency Medicine Minimum Dataset V0.7⁴
- College of Emergency Medicine (CEM UK): Emergency Department Clinical Quality Indicators- A CEM guide to implementation⁵.
- UK Department of Health (DoH): A&E Quality Indicators Data Definitions 2010⁶.
- Australian Council on Healthcare Standards (ACHS): Australasian Clinical Indicator Report 2001-2009⁷ and draft Emergency Medicine Indicators 2011⁸
- The Good Indicators Guide (NHS UK)⁹
- Measuring and Improving Quality in Emergency Medicine (Graff 2002)¹⁰
- Emergency Department Performance Measures and Benchmarking Summit (Definitions of Terms)¹¹
- Development of a Consensus on Evidence-Based Quality of Care Indicators for Canadian Emergency Departments: ICES Investigative Report¹²
- Quality, Performance and Performance Indicators: ACEM Quality Sub-Committee Meeting Sept 2010¹³
- Ministry of Health NZ (MOH): Ethnicity Data Protocols for the Health and Disability Sector, Wellington 2004¹⁴
- Implementing performance improvement in New Zealand emergency departments: the six hour time target policy national research project protocol¹
- Selection and validation of quality indicators for the Shorter Stays in Emergency Departments National Research Project¹⁵
- Streaming and the use of Emergency Department Observation Units and Inpatient Assessment Units: Ministry of Health; 2012.¹⁶

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1.0 Terminology

1.1 General Terminology:

Emergency Department (ED): ACEM (Australasian College for Emergency Medicine) definition¹⁷. “The Emergency Department (ED) is the dedicated area in a hospital that is organised and administered to provide a high standard of emergency care to those in the community who perceive the need for, or are in need of acute or urgent care, including hospital admission”. Emergency Department includes all adult and paediatric events, for all DHB’s. In New Zealand there are six levels of provision of emergency care services as follows:

Level One: Primary Care / Remote Rural*

Level Two: Sub-acute/Rural Hospital Emergency Department

Level Three: Secondary Hospital Emergency Department

Level Four: Major Secondary Hospital Emergency Department

Level Five: Tertiary Hospital Emergency Department

Level Six: Higher Level Tertiary Hospital Emergency Department

Further delineation of these levels of care delivered can be found in the following Ministry of Health publication: Emergency Department Services – Specialist Medical and Surgical Services – Tier Level Two Service Specification (2013)¹⁸

ED Observation Units or Short Stay Unit (SSU): ARCHI (Australian Resource Centre for Healthcare Innovations) definition.^{19, 20} “ED Short Stay Units (SSU's) have been developed to provide a short period of assessment, course of therapy or observations for a group of patients who no longer require active ED care. In the past these patients would have just remained in the ED. These units are designed to provide short-term (<24 hours) assessment and/or therapy for select conditions in order to streamline the episode of care. SSU front loads resources to provide an intensive period of evaluation, treatment and supervision. The emphasis is on enhancing patient flow through ED by allowing for early transfer out and improving ED bed access.” The use of these units has been further defined in the context of the Shorter Stays in the ED Health Target in New Zealand in the document ‘Streaming and the use of Emergency Department Observation Units and Inpatient Assessment Units’ authored by the ED advisory group of the Ministry of Health.¹⁶

Assessment Units, Admission and Planning Unit (APU), Acute Diagnostic Unit (ADU) or similar: Referrals from Primary Care, other hospital specialists or outpatient clinics, to inpatient specialties may be directed here, bypassing the ED. The APU / ADU patients currently do not have a formal LOS time target. This may not be applicable to all hospitals. The use of these units has been further defined in the context of the Shorter Stays in the ED Health Target in New Zealand in the document ‘Streaming and the use of Emergency Department Observation Units and Inpatient Assessment Units’ authored by the ED advisory group of the Ministry of Health.¹⁶

Inpatient Ward: An area in the Hospital where secondary qualified medical care is provided on an ongoing basis by a named specialist.

Ethnicity: is ethnicity as collected and recorded for the patient **at event** and is current at the time of data collection for period of study. Ethnicity data can be sourced from:

- NHI (at event) = NMDS (Ministry of Health National Minimum Data Set) prioritized
- NHI ethnicity data (updated for changes along a continuum).
- NNAPC (National Non-Admitted Patients Collection). These people do not have a hospital event created. They spent less than 3 hours in hospital; therefore do not meet the MOH criteria for admission and thus a coded diagnosis. Prior to 2010 reporting was intermittent.

Ethnicity is the ethnic group or groups that people identify with or feel they belong to. Ethnicity is a measure of cultural affiliation, as opposed to biological, race, ancestry, nationality or citizenship. Ethnicity is self-perceived and people can belong to more than one ethnic group.²¹

- NZ Ministry of Health: “Ethnicity is self-identified and can change over time”.
- “The best method of collecting ethnicity data is to allow people to complete the ethnicity question themselves”²²

For this reason we suggest using ethnicity as described by the person at the time of their health-event.

Ethnicity data has not always been collected accurately in NZ²². Hauora IV (2007)²³ estimates an undercount of 5-15% of people identifying with Māori ethnicity, by census collected ethnicity data between 1991 and 2006 due to collection methods:

“There are a number of ways in which Māori are defined in official statistics. Having an overview of these ways helps us to interpret health statistics and understand something more about the context of health status and disparities in health experiences and outcomes”.²³

“Accurate ethnicity data is important to enable this comparison (between Māori and non-Māori). Previously however, official health data have been shown to undercount Māori. This leads to a mismatch between numerators and denominators that can bias results when population census denominator data are used to calculate rates”.²³

“Hospitalisations and cancer registrations continue to undercount Māori. This undercount was estimated by linkage to other datasets with more reliable ethnicity data From these estimates, Māori adjusters were created and applied to hospital and cancer registration

data to 'adjust' for the undercount of Māori in these datasets.
Hospitalisation rates were calculated from 2003 to 2005."^{23, 24}

The SSED NRP project team held discussions regarding whether to adjust the ethnicity data or not (in order to account for the undercount of Māori in hospital datasets). The SSED NRP research team, including University of Auckland Te Kupenga Hauora Māori researchers (Associate Professor Papaarangi Reid and Dr Elana Curtis, Te Kupenga Hauora Māori, Faculty of Medical and Health Sciences), in conjunction with Te Rōpū Rangahau Hauora a Eru Pōmare researchers Dr Donna Cormack and Dr Ricci Harris (Eru Pōmare Māori Health Research Centre, Wellington) agreed that adjustment is NOT required for hospital ethnicity data in the following contexts:

- Where the ethnicity collected for the numerator is the same as the ethnicity collected for the denominator.
- Where the calculation of population rates using Census ethnicity as the denominator is not required (as there will not be numerator/denominator bias present within the dataset).

1.2 Time and Date Abbreviations used in Data Definitions:

Time Abbreviations:

- HH: Hour range from 00 to 23
- MM: Minute range from 00 to 59

A 24 hour time period is from 00:00:00 to 23:59:59

For time values Midnight is 00:00:00

Date Abbreviations

- DD: Day range from 01 to 31
- MM: Month range from 01 to 12
- CC: Century Range 18,19 or 20
- YY: Year range 00 to 99

Layout Abbreviations

- N = Numeric value
- A = Alpha value

1.3 Reporting Frequency of Measures:

Some measures should be recorded only occasionally, others should be measured regularly and some continuously (measures listed in bold are mandatory). To this end, each of the measures is categorised as:²

- **Continuously**
 - As often as possible but at least monthly (for example, performance against the 'Shorter stays in emergency departments' health target)
- **Regularly**
 - At least 12 monthly. If a department is able to measure some of these continuously, that is preferable (e.g. many of the clinical audits).
- **Occasionally**
 - Approximately two to five yearly. Many of the slowly changing measures, such as size of department, staffing levels, etc. should be measured as required, for the purposes of benchmarking with published standards or precedents.

2.0 Patient Journey Time Stamps:

DIAGRAMMATIC REPRESENTATION

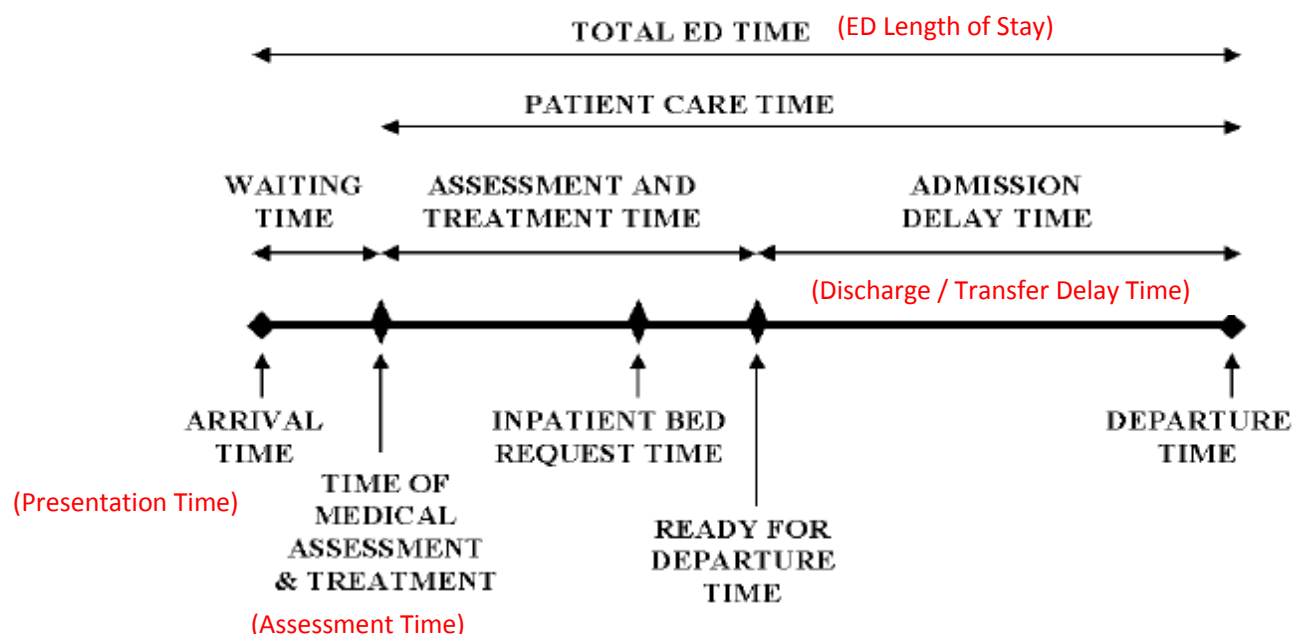


Figure 1. **ACEM Time Stamp Graphic¹⁷**

(In addition, time of referral by the ED to an inpatient team and time of assessment by a representative of an inpatient team, might be useful time stamps.)

The intervals (differences) between each time stamp may be used from time to time as markers of the efficiency of patient flow through the acute care system. When summarising such time intervals the summary statistic usually recommended by statisticians, is the median (with measure of spread being the Interquartile Range, IQR). This is because the distributions of these time intervals are usually skewed, most often to the right. However the median will not reflect the experience of those patients with extreme long stays in any part of the system (unless more than half of patients have an extreme length of stay). In this setting, the proportion of patients with a length of stay greater than a particular time is the most sensitive to extreme outliers, and may be a better measure for improvements in quality of care.

The proportion of patients meeting a specified target for a difference between time stamps (e.g. with respect to compliance with the Australasian Triage Scale or the Shorter Stays in ED target) may also be used as a quality measure. In this case the numerator is the number of eligible patients meeting a specified time target and the denominator is the total number of eligible patients for that indicator. The measure of spread will be the 95% CI for the proportion.

2.1 Ambulance at Hospital Time

Fieldname	<i>ambhosp</i>
Definition	The time (and date) the ambulance crew arrives at the treatment facility.
Layout	DD/MM/CCYY HH:MM (Time: 15 characters with a space between date and time values)
Codeset (If Applicable)	n/a
Reported for	All Ambulance arrivals with emergency medicine patients. Exclude: Ambulance arrivals with patients referred to inpatient services or inter-hospital transfers

Description

This is T6 of the St John Ambulance time stamps (see figure 2 below).²⁵ Other Ambulance services such as the Wellington Free Ambulance may have their own equivalent time stamps.

This refers to the time where the ambulance crew have arrived at the treatment facility with their patient, but not necessarily handed over to the receiving clinicians.

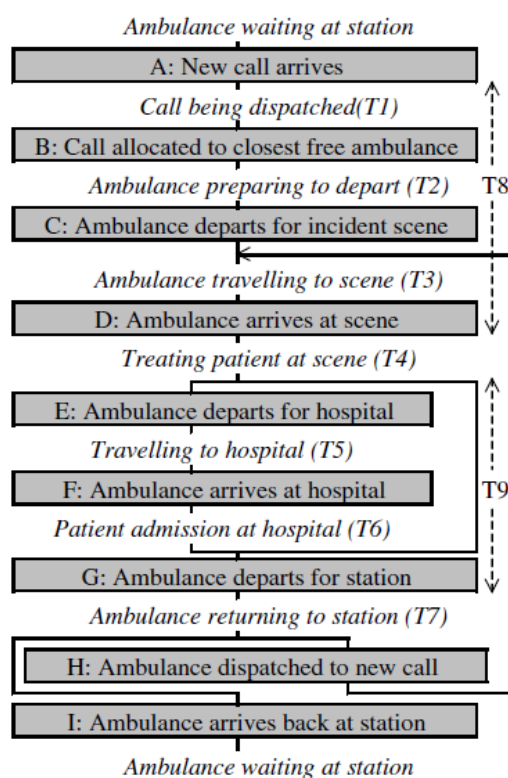


Figure 2.

Expressed As Numeric (Time)

2.2 Ambulance returning to station time

Fieldname	<i>ambstat</i>
Definition	The time (and date) the ambulance crew leaves treatment facility to return to the ambulance station.
Layout	DD/MM/CCYY HH:MM (Time: 15 characters with a space between date and time values)
Codeset (If Applicable)	n/a
Reported for	All Ambulance arrivals with emergency medicine patients. Exclude: Ambulance arrivals with patients referred to inpatient services or inter-hospital transfers
Description	This is T7 of the St John Ambulance time stamps (figure 2).²⁵ Other Ambulance services such as the Wellington Free Ambulance may have their own equivalent time stamps. This refers to the time when the ambulance crews have either left the treatment facility or are clear and available for work. This will mean they have handed over their most recent patient to the treatment facility clinicians and are free to attend further patient calls.
Expressed As	Numeric (Time).

2.3 ED Presentation Time

Fieldname	<i>edprestime</i>
Definition	The time (and date) the patient arrives at the Emergency Department during the time period of interest. This is usually recorded as the time of first contact by the patient with the ED triage nurse or clerical staff, whichever comes first.
Layout	DD/MM/CCYY HH:MM (Time: 15 characters with a space between date and time values)
Codeset (If Applicable)	n/a
Reported For	All Events
Description	Is 'Event Start Date' (NMDS) The time of initial contact between the patient and the triage nurse or clerical staff, whoever they see first. A recording accuracy to within the nearest minute is appropriate. There should be no delay between the physical arrival in the ED of a patient who is seeking care and their first contact with staff¹⁷. Midnight is 00:00:00
Expressed As	Numeric (Time).

2.4 ED Triage Time

Fieldname	<i>edtritime</i>
Definition	The time (and date) the patient is assessed by the Medical Triage Staff (either nurse or doctor).
Layout	DD/MM/CCYY HH:MM (Time: 15 characters with a space between date and time values)
Codeset (If Applicable)	n/a
Reported For	All Events
Description	The point in time that the patient is triaged by a health professional trained in such, into an urgency category as per the Australasian Triage scale (section 4.3). If triage occurs on arrival, Triage Time will equal Presentation Time
Expressed As	Numeric (Time)
Quality Measure	<i>(2.4) Triage Time – (2.3) ED Presentation Time</i>
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long lengths of stay</i> Proportion meeting target for time of distribution %(95%CI)
Numerator (If Applicable)	Number of eligible patients meeting target for triage
Denominator (If Applicable)	Total number of eligible patients

2.5 ED Assessment Time

Fieldname	<i>edasstime</i>
Definition	The time (and date) a patient is first attended to by an ED Clinician
Layout	DD/MM/CCYY HH:MM (Time: 15 characters with a space between date and time values)
Codeset (If Applicable)	n/a
Reported For	All Events Exclude: Did Not Waits (DNW), Dead on Arrival (DOA), Triage Nurse assessment
Description	Time first attended to by an Emergency Department Health Professional or Clinical Decision Maker. A clinical decision maker can include: ▪ Doctor ▪ Emergency Nurse Practitioner ▪ Clinical nurse specialist ▪ Nurse using clinical pathway Also known as “sign-on time”, this can be electronically captured when a Health Professional takes responsibility for the patient, or documents an ‘assessment time’ in the clinical notes.
Expressed As	Numeric (Time).

2.6 ED Referral Time

Fieldname	<i>edreftime</i>
Definition	The time (and date) a request is made to an Inpatient Specialties service for review or admission of a Patient
Layout	DD/MM/CCYY HH:MM (Time: 15 characters with a space between date and time values)
Codeset (If Applicable)	n/a
Reported For	Includes: All Events referred for Inpatient Care Excludes: ED discharges or ED transfers to other hospitals
Description	When a patient needs to be admitted to hospital the Emergency Department Practitioner must refer this patient to the relevant inpatient specialty. The time the transfer of care happens should be either captured electronically (by change of CBU on the computer system – i.e. electronic referral) or documented by the physician in the notes.
Expressed As	Numeric (Time)

2.7 Inpatient Team Start Time

Fieldname	<i>ipstarttime</i>
Definition	The time (and date) a patient is seen by an Inpatient Registrar or other team Member.
Layout	DD/MM/CCYY HH:MM (Time: 15 characters with a space between date and time values)
Codeset (If Applicable)	n/a
Reported For	Includes: All events referred for Inpatient Care Excludes: ED discharges or ED transfers to other hospitals
Description	Can be captured electronically with Inpatient Physician "sign-on" time or on the clinical notes as documented by the Physician
Expressed As	Numeric (Time)

2.8 Inpatient Team Finish Time

Fieldname	<i>ipendtime</i>
Definition	The time (and date) the Inpatient Registrar or other team Member has concluded the referred patient assessment.
Layout	DD/MM/CCYY HH:MM (Time: 15 characters with a space between date and time values)
Codeset (If Applicable)	n/a
Reported For	Includes: All events referred for Inpatient Care Excludes: ED discharges or ED transfers to other hospitals
Description	This time may be much more difficult to capture - may be captured electronically. A surrogate measure may have to be "discharge time" or "bed request time", for patients seen by an inpatient team member (subsequently discharged or admitted).
Expressed As	Numeric (Time)

2.9 Bed Request Time

Fieldname	<i>bedreqtime</i>
Definition	The time (and date) an Inpatient Bed is booked for the patient
Layout	DD/MM/CCYY HH:MM (Time: 15 characters with a space between date and time values)
Codeset (If Applicable)	n/a
Reported For	Includes: All Events where the patient is admitted Excludes: ED discharges or ED transfers to other hospitals
Description	ACEM: This represents the time when a formal request is made to obtain an inpatient bed for a patient requiring admission to hospital. This time is significantly more subjective than arrival time or departure time ¹⁷ Bed Request usually follows completion of inpatient specialty review of the patient. Can be captured electronically where a bed is requested over a PIMS or electronic Bed Management system or via a Bed Manager and documented by hand.
Expressed As	Numeric (Time)

2.10 Bed Allocation Time

Fieldname	<i>bedalltime</i>
Definition	The time (and date) when a requested inpatient bed is allocated to a particular patient
Layout	DD/MM/CCYY HH:MM (Time: 15 characters with a space between date and time values)
Codeset (If Applicable)	n/a
Reported For	Includes: All Events where the patient is admitted Excludes: ED discharges or ED transfers to other hospitals
Description	Beds are allocated as is appropriate for the patients' need to be in hospital (i.e.: Surgical Ward for a surgical problem). Therefore it may be easier to allocate certain patients beds as compared to others. A 'Home Ward' is the ward that provides the specialised medical and nursing care required by the patient. Outlier: Those patients allocated a bed in a ward whose specialty alignment is not that of the patient's 'Home Ward'. Bed Allocation data is captured electronically or manually by the Clerical / Bed manager Staff when an appropriate inpatient bed has been found
Expressed As	Numeric (Time)

2.11 ED SSU Admit / Assign Time

Fieldname	<i>edssutime</i>
Definition	The time (and date) a patient is admitted to the ED Short Stay / Observation Unit
Layout	DD/MM/CCYY HH:MM (Time: 15 characters with a space between date and time values)
Codeset (If Applicable)	n/a
Reported For	Includes: All ED patients admitted to the ED SSU/Obs Unit Excludes: Patients admitted under inpatient team services, discharges direct from ED, transfers
Description	Electronic Capture (SSU “Flag” or time of arrival in SSU) or Documentation in the clinical notes. Clinicians may admit a patient to an ED SSU / Obs unit if it is felt that they need a further short period of time for observation, or they need treatment that is usually less than 12 hours duration. This ‘stops the clock’ for the ED LOS – however these patients are still under the care of the ED team. The total LOS of the patient including their ED SSU LOS can be captured by adding ED LOS to SSU LOS (2.13 + 9.1).
Expressed As	Numeric (Time)

2.12 ED Departure Time

Fieldname	<i>eddeptime</i>
Definition	The time (and date) when the patient physically leaves the department
Layout	DD/MM/CCYY HH:MM (Time: 15 characters with a space between date and time values)
Codeset (If Applicable)	n/a
Reported For	All Events
Description	ED Visit End Time: the time at which the patient physically leaves the ED: either admitted to an Inpatient ward, transferred to another hospital facility or discharged to home. Captured electronically ○ Admission: is the time at which the patient is physically moved from the ED to an inpatient ward, or the time at which a patient begins a period of formal observation, whether in ED SSU observation beds (see below), an observation unit, or similar. Inpatient wards include Inpatient short stay units ○ ED SSU Admission: allows a period of formal observation under the care of Emergency medicine, not inpatient specialties ○ Transfer: is the time a patient physically leaves the ED after being assessed as needing treatment at another health facility, or they are resident in area serviced by another DHB and are therefore transferred to their 'Domicile Hospital'. ○ Discharge: is the time at which a patient being discharged from the ED to the community physically leaves the ED. If treatment is finished and patient is waiting in the ED facility for transport they can be treated as discharged²⁶. ○ Death: transfer to mortuary
Expressed As	Numeric (Time)

2.13 ED LOS

Fieldname	<i>edlos</i>
Definition	Emergency Department Length of Stay. Interval between Presentation Time and ED Departure Time during the same hospital event. Departure from ED means admission to hospital, discharge from the ED to the community or transfer from ED to another acute hospital.
Layout	NNNNN (Time in Minutes: up to 5 characters)
Reporting Frequency	Mandatory Continuously
Description	Length of stay for all patients presenting to the ED during time period X who are subsequently admitted to the Hospital, transferred or discharged from the Emergency Department during the same hospital event. It is mandatory for each hospital to report ED LOS as per the MOH “Shorter Stays in Emergency Departments Health Target” therefore all DHBs should be able to provide data for ED LOS. The target maintains that 95% of patients will be admitted, transferred or discharged within 6 hours.
Quality Measure	<i>(2.12) ED Departure Time – (2.3) ED Presentation Time</i>
Expressed As	Numeric (Time).
Numerator	Number of eligible patients meeting target for time of disposition
Denominator	Total number of eligible patients
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long lengths of stay</i> Proportion meeting target for time of distribution %(95%CI)

2.14 Ambulance Offload Time

Fieldname	<i>ambofftime</i>
Definition	The time spent by the ambulance crew at the treatment facility handing over care of the patient to the receiving clinicians and making ready for the next job.
Layout	NNNNN (Time in Minutes: up to 5 characters)
Codeset (If Applicable)	n/a
Reporting	Discretionary
Frequency	Regularly
Description	This is T6 / T7 of the St John Ambulance time stamps (figure 2). Other Ambulance services such as the Wellington Free Ambulance may have their own equivalent time stamps. This refers to the time it takes for the ambulance crew (after arriving at the treatment facility) to hand patient care over to the receiving clinicians. This can be a proxy measure of ambulance ramping (suggesting ED overcrowding) – a long offload time suggests delays in handing over patient care. Delays to ambulance off-load and ‘ramping’ are not considered to be a significant problem in NZ, however this needs to be monitored to ensure delays to offloading are not used to game the SSED target.
Quality Measure	<i>(2.2) Ambulance returning to station time – (2.1) Ambulance at hospital time</i>
Expressed As	Numeric (Time)
Numerator	Number of ambulance visits meeting target return time
Denominator	Total number of ambulance visits
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long lengths of stay</i> Proportion meeting target for time of distribution %(95%CI)

2.15 Triage to Clinical Decision Maker Time

Fieldname	<i>tritocdm</i>
Definition	The time taken for a patient be seen by an ED clinician following triage.
Layout	NNNNN (Time in Minutes: up to 5 characters)
Codeset (If Applicable)	n/a
Reporting	Mandatory
Frequency	Continuously
Description	Time taken from initial triage to be first attended to by an Emergency Department Health Professional or Clinical Decision Maker. A clinical decision maker can include any clinician who can make clinical decisions or begin a care pathway over and above triage: ▪ Doctor ▪ Emergency Nurse Practitioner ▪ Clinical nurse specialist ▪ Nurse using clinical pathway “Traditionally the Australasian Triage Scale (ATS) benchmarking has been used to assess this, with associated triage category performance thresholds published by the ACEM. Because of the evolution of the models of care in our EDs, comparison of an ED’s performance against the performance thresholds published by ACEM for each of the triage categories has become a less accurate indicator of quality than it once was. However, it is recommended that such comparison is made, as part of internal quality improvement processes. While a gap between an ED’s performance and the ATS suggested performance might not represent a deficiency of care it should stimulate scrutiny to see if there are deficiencies and if improvements need to be made. Like all the indicators being used, it is most valuable as part of well-informed internal quality improvement processes rather than as isolated and ill-informed critique”.²
Quality Measure	<i>(2.5) ED Assessment Time – (2.4) ED Triage Time</i>
Expressed As	Numeric (Time)
Numerator	Number of patients meeting triage target time for category
Denominator	Total number of patients in that triage category
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long time intervals</i> Proportion meeting target for triage category %(95%CI)

2.16 ED Presentation to Inpatient Team Referral Time

Fieldname	<i>edpresipref</i>
Definition	The time it takes from ED arrival to referral for inpatient team assessment, for patients who need specialist input.
Layout	NNNNN (Time in Minutes: up to 5 characters)
Codeset (If Applicable)	n/a
Reporting	Discretionary
Frequency	Regularly
Quality Measure	<i>(2.6) ED Referral Time – (2.3) ED Presentation Time</i>
Expressed As	Numeric (Time)
Numerator	Number of patients meeting target time for inpatient review
Denominator	Total number of patients referred to inpatient team
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long lengths of stay</i> Proportion meeting target for inpatient team review %(95%CI)

2.17 ED Referral to Inpatient Team Assessment Time

Fieldname	<i>edrefipass</i>
Definition	The time it takes from the ED referral to the actual inpatient team assessment for patients who need specialist input.
Layout	NNNNN (Time in Minutes: up to 5 characters)
Codeset (If Applicable)	n/a
Reporting	Discretionary
Frequency	Regularly
Quality Measure	<i>(2.7) Inpatient Team Start Time – (2.6) ED Referral Time</i>
Expressed As	Numeric (Time)
Numerator	Number of patients meeting target time for inpatient review
Denominator	Total number of patients referred to inpatient team
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long lengths of stay</i> Proportion meeting target for inpatient team review %(95%CI)

2.18 Inpatient Team Assessment to Completion Time

Fieldname	<i>ipassipfin</i>
Definition	The time it takes for the inpatient team to completely assess patients who need specialist input.
Layout	NNNNN (Time in Minutes: up to 5 characters)
Codeset (If Applicable)	n/a
Reporting	Discretionary
Frequency	Regularly
Quality Measure	<i>(2.8) Inpatient Team Finish Time – (2.7) Inpatient Team Start Time</i>
Expressed As	Numeric (Time)
Numerator	Number of patients meeting target time for inpatient disposition
Denominator	Total number of patients referred to inpatient team
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long lengths of stay</i> Proportion meeting target for inpatient team disposition %(95%CI)

2.19 Bed Request to Bed Allocation Time

Fieldname	<i>bedreqall</i>
Definition	The time interval from bed request to bed allocation
Layout	NNNNN (Time in Minutes: up to 5 characters)
Codeset (If Applicable)	n/a
Reporting	Discretionary
Frequency	Regularly
Quality Measure	<i>(2.10) Bed Allocation Time – (2.9) Bed Request Time</i>
Expressed As	Numeric (Time)
Numerator	Number of patients meeting target time for bed request
Denominator	Total number of patients admitted to hospital
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long lengths of stay</i> Proportion meeting target for bed request %(95%CI)

2.20 Bed Allocation to ED Departure Time

Fieldname	<i>bedalleddep</i>
Definition	The time interval from inpatient bed allocation to the patient leaving the emergency department
Layout	NNNNN (Time in Minutes: up to 5 characters)
Codeset (If Applicable)	n/a
Reporting	Discretionary
Frequency	Regularly
Quality Measure	<i>(2.12) ED Departure Time – (2.10) Bed Allocation Time</i>
Expressed As	Numeric (Time)
Numerator	Number of patients meeting target time for bed allocation to admission
Denominator	Total number of patients admitted to hospital
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long lengths of stay</i> Proportion meeting target for bed allocation %(95%CI)

2.21 Access Block

Fieldname	<i>accblk</i>
Definition	Percentage of patients in ED requiring hospital admission spending >8 hours waiting in the ED for an Inpatient Bed.
Layout	NNNNN (Number: 5 characters)
Reporting Frequency	Discretionary Regularly
Description	The percentage of the ED to Ward admissions total whose ED LOS was greater than 8 hours over the study time period.
Quality Measure	<i>(Number of Admitted Patients with ED LOS > 8 hours / ED to Ward Admissions Total) x 100</i>
Expressed As	Numeric (Count)
Numerator	Number of patients who were admitted or planned for admission whose total ED time exceeded 8 hours
Denominator	Number of patients who were admitted or planned for admission
Summary Statistic	Proportion %(95%CI)

3.0 ED Overcrowding Measures:

3.1 Bed Definition

Definition A bed is a bed, not a trolley. It is in a defined space which is set up to provide safe care to the patient, i.e.: oxygen and suctioning equipment available.

Description **Inpatient Bed** is a bed, not a trolley. It is in a bed space which is set up to provide safe care to the patient, i.e.: oxygen and suctioning equipment available. A count of beds should not include Procedure Rooms and Whānau Rooms on the Ward.

Beds in the ED are *not* counted as Inpatient Beds and have a separate census from the Wards.

ED and APU Procedure Rooms, Whānau Rooms and waiting room or corridor spaces are not counted as defined ED or APU beds, as prolonged care is not delivered there.

ED Short Stay / Observation Unit Beds are now considered to be inpatient beds by the Ministry of Health (MOH).³

Resourced Beds: A Resourced Bed is one which is functional in a bed capacity (as above) being an “Inpatient Bed” but it is also staffed by Nursing Staff with the appropriate skill mix. Beds may be available, but may not be able to be used if it is not “resourced” correctly (e.g. for outliers). The “bed” in this context represents not simply a place for the patient to sleep, but the services that go with being cared for by the medical facility: admission processing, physician time, nursing care, necessary diagnostic work, appropriate treatment, and so on.

Funded Resourced Beds: these are staffed as above and funded with allocation of monies from the patients designated CBU (for example for outliers). An outlier is defined as: “a patient who is being cared for on a ward whose specialty alignment is not that of the patient’s home ward”. The Home ward is “The ward that provides the specialised medical and nursing care required by the patient”. Therefore if a patient is a surgical team patient, but on a medicine based ward they are a surgical outlier there – the bed is funded by Surgery but resourced by Medicine (but only if the nurse has an appropriate skill mix to cover the bed – if not, it may not be feasible to use the bed).

3.2 ED Appropriate Bed Census

Fieldname	<i>edappbed</i>
Definition	Number of defined spaces which are set up to provide appropriate and safe care to the patient in the Emergency Department
Layout	NNN (Number: 3 Characters)
Codeset (If Applicable)	n/a
Reported For	Includes: Emergency Department Wards
	Excludes: : Inpatient Wards, APU, SSU, ADU, Clinic and Day stay Beds
Description	An appropriate ED bed is in a defined bed space which is set up to provide safe care to the patient, i.e.: oxygen and suctioning equipment available. Categories of ED bed include: Waiting Room: Waiting area for ambulatory patients. No patient care is undertaken here. Procedure Rooms: Patient care areas where various minor surgical and medical procedures undertaken, either under local anaesthesia or sedation. Prolonged care is not delivered here but 1:1 nursing available and set-up is similar to a resuscitation bed space (see below) if procedural sedation being undertaken. Ambulatory Care Space: Physical space that will only provide an area to assess and treat the “walking wounded” or ambulatory patients. No prolonged ongoing care delivered here. High turnover of patients Acute Bed / Space: Similar level of care to inpatient ward bed. Oxygen and suction available. Patients are usually more stable, requiring no more than 2-4 four hourly monitoring. Usual nurse ratio 1:4 or 1:6 Monitored Bed / Space: Above plus provision of continuous cardiac monitoring, and in some cases non-invasive ventilation. Usual nursing ratio 1:2 or 1:3 Resuscitation Bed / Space: All of the above plus provision of ICU/HDU level of care to the most unwell patients. Advanced airway, ventilation and invasive and haemodynamic monitoring available. Usual nursing ratio 1:1 or 1:2 Beds in the ED are <i>not</i> counted as Inpatient Beds and have a separate census from the Wards. ED Procedure Rooms, Whānau Rooms, the waiting room and corridor spaces are NOT counted as defined ED beds, as prolonged care is not delivered there.
Expressed As	Numeric (Count)

3.3 ED Inappropriate Bed Spaces Census

Fieldname	<i>edinappbed</i>
Definition	Number of defined spaces which are used as patient care spaces, but are not set up to provide appropriate and safe care i.e.: no oxygen or suctioning equipment available
Layout	NNN (Number: 3 Characters)
Codeset (If Applicable)	n/a
Reported For	Includes: Emergency Department Wards
	Excludes: : Inpatient Wards, APU, SSU, ADU, Clinic and Day stay Beds
Description	An inappropriate space is one not intended for the provision of patient care. Corridor spaces, waiting rooms, ED Procedure Rooms and Whānau Rooms are NOT to be counted or defined as an ED bed, as they are not intended for the provision of patient care and prolonged care is not delivered there. However, these spaces are on occasion used when the ED appropriate bed spaces are oversubscribed or there is a surge / major incident.
Expressed As	Numeric (count)

3.4 ED Patient Census

Fieldname	<i>edpatcen</i>
Definition	Total number of patients presenting to the Emergency Department over time period X
Layout	NNNNNNN (Number: 7 Characters)
Codeset (If Applicable)	n/a
Reported For	Includes: Emergency Departments Excludes: : Inpatient Wards, APU, SSU, ADU, Clinic and Day stay Beds
Description	Total number of ED patients over the required time period (per hour, per day, per month, per year etc).
Expressed As	Numeric/time period

3.5 Proportion ED Patients in Inappropriate ED Bed Spaces

Fieldname	<i>edpatceninapp</i>
Definition	Number of patients presenting to the Emergency Department over a time period X who are placed in Inappropriate Patient Care Areas for part or all of their stay.
Layout	NNN (Number: 3 Characters)
Codeset (If Applicable)	n/a
Reported For	Includes: ED Wards Excludes: : Inpatient Wards, APU, SSU, ADU, Clinic and Day stay Beds
Description	Used as a subgroup analysis for ED LOS.
Expressed As	Numeric (percentage)
Numerator	Number of ED patients in inappropriate bed spaces (3.3), time period
Denominator	X
Summary Statistic	Total number of patients in the ED (3.4) in time period X Proportion inappropriate beds %(95%CI)

3.6 LOS Patients in Inappropriate ED Bed Spaces

Fieldname	<i>edlosinapp</i>
Definition	Length of time patients spend in inappropriate bed spaces in ED
Layout	NNNNN (Time in Minutes)
Codeset (If Applicable)	n/a
Reporting	Mandatory
Frequency	Regularly
Description	Length of stay of patients in inappropriate spaces (total patient hours). This measure is considered one that all EDs should scrutinise. While it might be difficult to do for some EDs, and therefore might be regular rather than continuous, it is a direct measure of what the Shorter Stays Target was attempting to address (ED overcrowding). However, if computer coding doesn't allow the capture of this information, then the ED Occupancy Rate (3.7) might be substituted. Time period to be scrutinised can be chosen by organisation.
Quality Measure	<i>(2.12) ED Departure Time – (2.3) ED Presentation Time for: Subset: ED Patient Census of Inappropriate ED Bed Spaces (3.5) over time period X</i>
Expressed As	Numeric (Time).
Numerator	Number of eligible patients meeting target for time of disposition
Denominator	Total number of eligible patients
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long lengths of stay</i> Proportion meeting target for time of disposition %(95%CI)

3.7 Emergency Department Occupancy Rate (EDO) (%)

Fieldname	<i>edocrate</i>
Definition	Average hourly bed occupancy rate for the Emergency Department
Layout	NNN (Number: 3 Characters)
Codeset (If Applicable)	n/a
Reported For	Includes: ED Excludes: APU, SSU, ADU, Inpatient Wards, Day Stay wards
Description	The EDO is the most recent score to be proposed for ED crowding. This is a simple calculation based on the total number of ED patients divided by the number of treatment bays per hour. Expressed as a percentage. It has been validated against the EDWIN score, DNW rates and ambulance diversion in 6 centers in the USA and performed well. ²⁷
Quality Measure	<i>(3.4) ED patient census *hourly* / (3.2) ED appropriate bed census x 100</i>
Expressed As	Numeric (Count)
Numerator	ED patient census *hourly* (3.4)
Denominator	ED appropriate bed census (3.2)
Summary Statistic	Proportion, %(95%CI)

3.8 Proportion Time EDO >100%

Fieldname	<i>edo100</i>
Definition	Number of hours the hourly bed occupancy rate for the Emergency Department exceeds 100% as a proportion of the total time period chosen to be measured
Layout	NNN (Number: 3 Characters)
Codeset (If Applicable)	n/a
Reporting	Mandatory
Frequency	Regularly
Description	ED occupancy rate of over 100% (all patient care spaces/cubicles full). This measure gives an indication of ED occupancy which would impair patient flow and lead to placement of patients in corridors or other clinically inappropriate places. It should be relatively easy to measure using number of patients in the ED (including in the waiting room) over any time period (x) and the total number of treatment spaces. It is a measure that could be made in 'real time' or as a retrospective measure of the amount or proportion of time the department is 100% or more occupied. Time period to be scrutinised can be chosen by the organisation.
Quality Measure	<i>(3.7) Number of Hours EDO >100% / Number of Hours in chosen ED Time Period X x 100</i>
Expressed As	Numeric (Count)
Numerator	Number of hours EDO (3.7) >100% (3.7)
Denominator	Number of hours in chosen ED Time period X
Summary Statistic	Proportion, %(95%CI)

4.0 ED Demographic Measures

4.1 ED Patient Attendance / 1000 population	
Fieldname	<i>edpatattpop</i>
Definition	Number of Emergency Medicine patients attending the Emergency Department per 1000 of the population served by the particular ED.
Layout	NNNN (Number: 4 Characters)
Codeset (If Applicable)	n/a
Reporting	Discretionary
Frequency	Regularly
Description	"This measure gives an indication of ED utilisation by the population. While there isn't a 'right' utilisation, it is considered that less than 200 per 1000 is a low rate of utilisation, and over 300 is high. This measure gives a snapshot of utilisation. This measure should also capture use by ethnicity."² The yearly ED patient census is the total number of Emergency Medicine presentations to an Emergency Department over a full calendar year (00:00 01/01/CCYY – 23:59 31/12/CCYY). The population of the ED catchment area is the number of people in the area served by the particular emergency department. This may equal that population served by the DHB.
Expressed As	Numeric (Count)
Numerator	ED Patient Census *Yearly* (3.4)
Denominator	Population of ED Catchment Area (DHB Boundary)/1000
Summary Statistic	Rate (number/year)/1000 DHB population base

4.2 Admission Rate / 1000 population

Fieldname	<i>adratepop</i>
Definition	Number of Emergency Medicine patients admitted to inpatient services from the Emergency Department, per 1000 of the population served by the particular ED.
Layout	NNNN (Number: 4 Characters)
Codeset (If Applicable)	n/a
Reporting	Discretionary
Frequency	Regularly
Description	Excludes ED Short Stay Patients, ED Discharged Patients, DNW and DOA
Expressed As	Numeric (Count)
Numerator	ED Patient Census (Subset: Admitted) *Yearly* (3.4)
Denominator	Population of ED Catchment Area (DHB boundary)/1000
Summary Statistic	Rate (number/year)/1000 DHB population base

4.3 Triage Category

Fieldname	<i>tricat</i>
Definition	Patients' medical urgency category according to Australasian Triage Scale. ²⁸ The patient needs to be seen within the time allocated to the triage category.
Layout	N (Number: 1 Character)
Codeset (If Applicable)	
Description	The maximum length of time someone should wait for Health professional assessment and treatment as determined by the reason for coming to hospital.

Triage Cat 1: Immediately life-threatening,

Triage Cat 2: Imminently life-threatening, important time-critical treatment, or very Severe Pain.

Triage Cat 3: Potentially life-threatening condition, potential adverse outcomes from delay > 30 min, or severe discomfort or distress (situational urgency)

Triage Cat 4: Potentially serious (condition may deteriorate), potential adverse outcomes from delay > 60 min, significant complexity or severity of patients condition, or discomfort or distress (situational urgency)

Triage Cat 5: Less urgent (chronic or minor conditions), or dealing with administrative issues only

Triage Cat	Max Clinically Appropriate Triage Time	Performance Benchmark
1	Immediate	100%
2	10 mins	80%
3	30 mins	75%
4	60 mins	75%
5	120 mins	75%

Table 1.

Because of fluctuations in patient numbers, the seriousness of their conditions, and other pressures on hospital resources, these times cannot always be met. In acknowledgement of this previously, benchmarks were set that indicated the acceptable percentage of patients who started treatment within the allocated triage time (as indicated in the table above).

Expressed As Categorical

4.4 ED Patient Attendance by ATS Category

Fieldname	<i>edatttricat</i>
Definition	Number of patients attending the ED grouped into triage categories
Layout	NNNN (Number: 4 Characters)
Codeset (If Applicable)	n/a
Reporting	Discretionary
Frequency	Regularly
Description	This gives a snapshot of the acuity of patients attending the emergency department and how many low to high acuity patients are seen. This helps to inform ED funding, design and staffing models. The total patient census over a time period X is broken down in to numbers per triage category (1-5). The time period to be scrutinised can be chosen by the organisation.
Expressed As	Numeric (Count)
Numerator	ED Patient Census (Subsets Triage Category 1-5) *in time period X* (3.4)
Denominator	ED Patient Census *in time period X* (3.4)
Summary Statistic	Proportion %(95%CI)

4.5 Admission Rate by ATS Category

Fieldname	<i>adratetricat</i>
Definition	Number of patients admitted to inpatient services from the ED, broken down into triage category subsets.
Layout	NNNN (Number: 4 Characters)
Codeset (If Applicable)	n/a
Reporting	Discretionary
Frequency	Regularly
Description	Gives a snapshot as to the acuity of patients attending the ED. It would be expected that admission rates would be highest in triage categories 1-2 and lowest in categories 4-5.
Expressed As	Numeric (Count)
Numerator	ED Patient Census (Subset: Triage Category 1-5) *Yearly* (3.4)
Denominator	ED Patient Census *Yearly* (3.4)
Summary Statistic	Proportion %(95% CI)

4.6 Unplanned ED Re-Attendance < 48 Hours

Fieldname	<i>edreattend</i>
Definition	Number of unplanned re-attendances to the ED within 48 hours of discharge, with the same medical problem.
Layout	NNNNNN (Number: 6 Characters)
Codeset (If Applicable)	
Reported For	Includes: All ED Presentations (Includes DNW's) Excludes:
Description	Re-Attendees are those people returning to the ED with issues relating to a medical condition they were assessed for in the preceding 48 hours. These can either be advised, planned or unplanned re-attendances. These are usually flagged electronically by clerical or triage staff – but not always and may be hard to capture. Unplanned Re-Attendance – Patients come back to the ED spontaneously (i.e. not advised to return or no planned return) with ongoing concerns regarding the same medical condition they were discharged with previously. The concern here is risk of higher mortality, the issue of possible initial low quality care, or poor (including premature) discharge methods. “This measure is promoted by most international jurisdictions. While ‘unplanned’ is hard to define, and unplanned returns might represent appropriate care on many occasions, it is considered an important measure to use for benchmarking with stated expectations, and to examine trends. The 48 hour time scale is commonly employed, although times from 24 hours to a week are used elsewhere.”² The process for this measure is likely to include an electronic flag for all re-attendees within 48 hours, and then a selection process (probably a notes review by an ED doctor or nurse) to determine those whose re-attendance was ‘unplanned’. As well as a ‘count’ of these patients the notes review would allow a thematic analysis to determine what, if any, deficiencies in care might have contributed to unplanned returns.
Expressed As	Numeric (Count)

4.7 Unplanned ED Re-Attendance Rate < 48 hours

Fieldname	<i>edrateendrate</i>
Definition	Proportion of ED attendances over time period X who have an unplanned returned to the ED within 48 hours of discharge, with the same medical problem.
Layout	
Codeset (If Applicable)	n/a
Reporting	Mandatory
Frequency	Regularly
Quality Measure	<i>(4.6) Unplanned ED Re-attendances <48 hour *time period X* / (3.4) ED Patient Census *time period X* x 100</i>
Expressed As	Numeric (Count)
Numerator	Unplanned ED Re-attendances <48 hours (4.6) *time period X*
Denominator	ED Patient Census *time period X* (3.4)
Summary Statistic	Proportion %(95% CI)

5.0 ED Quality Processes

5.1 Mortality and Morbidity Review Sessions

Mandatory. Regularly.

Definition and implementation to be established locally by individual departments.

“This measure is fulfilled if regular sessions occur (at least 12 monthly), relevant learnings are collated and appropriate changes are made as a consequence. In other words, it is not just the performance of these sessions, but the contribution of these sessions to quality improvement. Cases might lead to performance of a clinical quality audit (see below) or a sentinel review process, to elucidate the learnings and to define what changes need to be made.”²

5.2 Sentinel Events Review Processes

Mandatory. Regularly.

Definition and implementation to be established locally by individual departments.

“These reviews are a formal process for investigating significant clinical events that resulted, or might have resulted, in patient harm. While the expectation is that such reviews would take place regularly, they would be triggered by a sentinel event and wouldn’t necessarily follow a minimum 12 monthly frequency.”²

5.3 Complaint Review and Response Process

Mandatory. Regularly.

Definition and implementation to be established locally by individual departments.

“Like mortality and morbidity review sessions and sentinel event review processes, the expectation of this measure is that there will be a process of review and response to complaints that feeds into quality improvement by identifying and addressing any deficiencies of care. This may be integrated into a DHB process.”²

5.4 Staff Experience Evaluations

Mandatory. Regularly.

Definition and implementation to be established locally by individual departments.

“It is expected that all emergency departments listen to the views of their staff regarding the quality of the department (job satisfaction, and patient care). Mechanisms to address this measure could include staff forums, planning days, staff appraisals, exit interviews, etc.”²

The measures above are not formally defined in this document, as the execution of these measures will be particular to the individual emergency department.

6.0 Patient Experience Measures

6.1 Patient Experience Evaluations

Mandatory. Regularly.

Definition and implementation to be established locally by individual departments / DHBs.

“It is expected that all DHBs listen to the views of their patients regarding the care they received. Mechanisms to address this measure could include general conversations with patients, written feedback and formal surveys. To assist with this process, the Health Quality and Safety Commission New Zealand are developing a set of patient experience indicators. The Commission is working closely with the Ministry of Health on the future implementation of the tool across the sector. DHBs will be able to add questions relevant to them and able to undertake more frequent local surveys.

www.hqsc.govt.nz/our-programmes/health-quality-evaluation/news-and-events/news/1085”²

6.2 Patient / Consumer participation in Quality Improvement processes

Discretionary. Regularly

Definition and implementation to be established locally by individual departments / DHBs.

“Consumer involvement might be in addition to patient satisfaction surveys. This might include ‘health literacy’ contribution to the development of patient information.”²

6.3 Left before seeing Decision-Making ED Clinician

Fieldname	<i>lwbsedclin</i>
Definition	Number of attendances where a patient registered at triage, but left without being seen by an ED Health Professional.
Layout	NNNNNN (number: 6 Characters)
Codeset (If Applicable)	n/a
Reported For	Includes: All Registered ED Presentations Excludes:
Description	Also known as “Did not Wait (DNW)”, “Renegé Rate” (from Queuing Theory) and “Left Without Being Seen” (LWBS). The patient does not wait to be seen by any Emergency Department Health Professional (i.e. Doctor, Nurse Practitioner, Nurse Specialist or a Nurse Initiated Pathway). The patient arrives in the department and leaves 1) before registration 2) after registration and before seeing triage nurse 3) after registration and seeing triage nurse but never at any of these times seeing a <u>treating</u> health professional (decision making clinician). “A decision making clinician is defined as someone who can make clinical decisions leading to definitive care or begin a care pathway over and above triage, and explicitly excludes a clinician who only undertakes triage (placing a patient in a queue and/or a place to await a doctor or decision making clinician). Under some circumstances a clinician might provide triage and then go on to deliver assessments and interventions which are consistent with being a decision making clinician. Hence, it is permissible to consider a triage nurse a decision making clinician if such interventions, over and above triage, have occurred.”² ACEM Definition:²⁹ “the number and percentage of ED patients who, for various reasons, decide to leave the ED before they are seen by an Emergency Medicine Physician” People who do not wait for assessment and treatment are a concern due to the perceived morbidity and mortality (serious adverse events) from a non-assessed and untreated medical condition. However recent studies have challenged this theory³⁰.
Expressed As	Numeric (Count)

6.4 Left before seeing decision making ED Clinician (Rate)

Fieldname	<i>lwbsrate</i>
Definition	Proportion of all attendances in time period X, where a patient registered at triage, but left without being seen by an ED Health Professional.
Layout	NNNNNN (number: 6 Characters)
Reporting	Mandatory
Frequency	Regularly
Reported For	Includes: All Registered ED Presentations Excludes:
Description	“Patients who are triaged but then do not wait for the doctor, or other decision making clinician to see them, might do so for a variety of reasons. However, among those reasons are long waits to see a doctor or other decision making clinician. The proportion of patients who do not wait should be measured for two reasons. First, a large number (more than a few percent) might represent a problem accessing care which the DHB should address. Secondly, this group are excluded from counting towards the SSED health target.” ²
Quality Measure	<i>(6.3) Left before seeing decision making ED Clinician *time period X* / (3.4) ED patient census *time period X* x 100</i>
Expressed As	Numeric (Count)
Numerator	Left before seeing decision making ED Clinician *time period X* (6.3)
Denominator	ED Patient census *time period X* (3.4)
Summary Statistic	Proportion %(95%CI)

6.5 Left before ED care completed

Fieldname	<i>lefted</i>
Definition	Number of attendances where a patient registered at triage, and subsequently seen by a treating ED Health Professional but left before their care was formally completed.
Layout	NNNNNN (number: 6 Characters)
Codeset (If Applicable)	
Reported For	Includes: All Registered ED Presentations Excludes:
Description	In this case patients can discharge against medical advice, or leave the department without notifying staff. In both cases they leave before their care is completed and before formal discharge by the decision making clinician. This can be intentional or unintentional. People who do not finish their assessment and treatment are a concern due to the perceived morbidity and mortality (serious adverse events) from a non-assessed and untreated medical condition. This may be difficult to measure – this is usually captured electronically by clerical staff as “discharge against medical advice – indemnity signed” or “discharge against medical advice – no indemnity”.
Expressed As	Numeric (Count)

6.6 Left before ED care completed (Rate)

Fieldname	<i>leftedrate</i>
Definition	Proportion of all attendances in time period X, where a patient registered at triage and subsequently seen by a treating ED Health Professional but left before their care was formally completed.
Layout	NNNNNN (number: 6 Characters)
Reporting	Discretionary
Frequency	Regularly
Reported For	Includes: All Registered ED Presentations Excludes:
Quality Measure	<i>(6.5) Left before ED care completed *time period X* / (3.4) ED patient census *time period X* x 100</i>
Expressed As	Numeric (Count)
Numerator (If Applicable)	Left before ED care completed *time period X* (6.5)
Denominator (If Applicable)	ED patient census *time period X* (3.4)
Summary Statistic	Proportion %(95%CI)

7.0 Clinical Quality Audits

7.1 Mortality rates for specific conditions benchmarked against expected rates.

Mandatory. Regularly.

“These are likely to be done in conjunction with other departments and might be occurring continuously as part of a registry or trauma system. For example:

- fractured neck of femur
- STEMI
- major trauma.”²

Implementation is to be established locally by individual departments / DHBs

7.2 Other Clinical Quality Audits: Demographic and Event Data

Audit Method

1. Request a list of NHI with basic demographic and time stamped data for patients who are discharged with the ICD codes relevant to the clinical audit in question (see Appendix 1) within the time period of the audit from the hospital’s data warehouse as an Excel file. If you have developed an alternative method of identifying patients for a particular audit then you may still use this guideline, the standards and the data collection tool which are downloadable from the MOH website (*Insert web link here*)
 - a. NHI
 - b. Age
 - c. Gender
 - d. Ethnicity
 - e. ED Presentation Time
 - f. ED Arrival Mode
 - g. ED Referral Type
 - h. Presenting Complaint
 - i. ED Triage Time
 - j. Triage Category
 - k. ED Assessment Time
 - l. ED Departure Time
2. This data can then be copied into the standard audit sheet downloadable from the MOH website (*Insert web link here*)
3. Request the notes relevant to the date of the visit from medical records
4. Complete the audit form using data from the clinical notes.

7.2.1 NHI

Fieldname	<i>nhi</i>
Definition	National Health Index number (NHI Number). The unique identification number assigned to a healthcare user by the National Health Index (NHI) database.
Layout	AAANNNN (Alphanumeric: 3 letters 4 numbers – 7 characters)
Reported For	All Events
Description	The NHI number is the cornerstone of MOH data collections. It is a unique 7 character identification number assigned to a healthcare user by the National Health Index (NHI) database. It is stored in the NMDS in an encrypted form. An NHI Number is given to every New Zealander at birth or first registration with health or disability services. The NHI holds the following information: name (including alternative names such as maiden names), NHI number, address, date of birth, sex, New Zealand resident status, ethnicity, and if appropriate, date of death, or flags indicating any medical warnings or donor information. Clinical information is not recorded on the NHI. Individual patients can be positively and uniquely identified for the purposes of treatment and care, and for maintaining medical records. It allows safe and secure identification of an individual to attempt to minimize the risk of wrong information³¹. A Patient must be registered on the NHI before any health-related episode.
Expressed As	String (Numeric and Text Value)

7.2.2 Diagnostic (ICD) Code

Fieldname	<i>icdcode</i>
Definition	Diagnosis Identifier: from ICD10 codebooks
Layout	NNAA (Number: X Character)
Codeset (If Applicable)	ICD-10-AM 6 th Edition: See Appendix 2 10.0
Reported For	All Events

Description ICD-10-AM and ACHI 6th Edition

The identification of events or cases can be by ICD-Code (diagnosis codes and procedural codes) for the above conditions – each of which is being studied as a marker of quality care in the ED and wider hospital system. Each event associated with an ICD-Code will be the event included for data gathering – collecting all the raw data variables presented in this dictionary.

Expressed As String (Numeric and Text Value)

7.2.3 Patient Age

Fieldname	<i>age</i>
Definition	Age of the Patient
Layout	NNN (Number: max 3 characters)
Reported For	All Events
Description	The duration of a persons' life, or existence to date How old the patient is in years as expressed in Ministry of Health Data. If the patient is younger than 2 years old this will be expressed in months (where possible). The Age is the patient's age at the time of the event, not at the time of data collection. It is calculated as follows:
Calculated	<i>(2.3) ED Presentation Time – (7.2.6) Patient Date of Birth</i>
Expressed As	Numeric (Year)

7.2.4 Patient Gender

Fieldname	<i>gender</i>
Definition	Gender of the Patient
Layout	N (Number: 1 Character)
Codeset	DHB / NZHIS Codes as: 0 Unknown 1 Male 2 Female 9 Not Specified NHI Codes As: - F = female - M = male - U = unknown
Reported For Description	All Events NHI stores data on Gender NZHIS stores data on Gender Changes. Gender is the genotypic and phenotypic distinction between Male and Female. It should be recorded as inferred by the patient and what gender they identify with; as is the case with gender reassignment (sex change) or intersex cases.⁴
Expressed As	Categorical

7.2.5 Patient Ethnicity (Level 1)

Fieldname	<i>ethnicity1</i>																				
Definition	Ethnic Group with which the Patient identifies																				
Layout	N (Number 1 Character)																				
Codeset	<table> <tr> <th>Code</th><th>Description</th></tr> <tr> <td>1</td><td>European</td></tr> <tr> <td>2</td><td>Māori</td></tr> <tr> <td>3</td><td>Pacific Island</td></tr> <tr> <td>4</td><td>Asian</td></tr> <tr> <td>5</td><td>Middle Eastern/Latin American/African (was Other)</td></tr> <tr> <td>6</td><td>Other Ethnicity</td></tr> <tr> <td>7</td><td>Not Recorded</td></tr> <tr> <td>8</td><td>Not Available</td></tr> <tr> <td>9</td><td><i>Residual Categories*</i></td></tr> </table>	Code	Description	1	European	2	Māori	3	Pacific Island	4	Asian	5	Middle Eastern/Latin American/African (was Other)	6	Other Ethnicity	7	Not Recorded	8	Not Available	9	<i>Residual Categories*</i>
Code	Description																				
1	European																				
2	Māori																				
3	Pacific Island																				
4	Asian																				
5	Middle Eastern/Latin American/African (was Other)																				
6	Other Ethnicity																				
7	Not Recorded																				
8	Not Available																				
9	<i>Residual Categories*</i>																				
Reported For	All Events																				
Description	The above are MOH defined sets^{14, 32}— these are Ethnicities captured under a patient’s NHI for each discrete health-related event. Ethnicity data can be garnered from: • NHI (at event) • NMDS (Ministry of Health National Minimum Data Set: prioritized NHI ethnicity data, updated for changes along a continuum). • NNAPC (National Non-Admitted Patients collection). These people do not have a hospital event created as they spent less than 3 hours in hospital and therefore do not meet the criteria for admission. Prior to 2010 reporting was intermittent. Ethnicity is the ethnic group or groups that people identify with or feel they belong to. Ethnicity is a measure of cultural affiliation, as opposed to race, ancestry, nationality or citizenship. Ethnicity is self perceived and people can belong to more than one ethnic group.²¹ NZ MOH: “Ethnicity is self-identified and can change over time”. For this reason we are using Ethnicity as described by the person at the time of their health-event within the study time period. *The Ministry of Health currently uses Code 9 at Level 1 in National Data Collection reporting but Code 9 is not in the Ethnicity Data Protocols. These codes incorporate the changes as of July 2009³² (in brackets on tables)																				
Expressed As	Categorical																				

7.2.6 ED Arrival Mode

Fieldname	<i>edarrmode</i>												
Definition	Transport Mode by which the Patient arrives in the Emergency Department												
Layout	N (Number: 1 Character)												
Codeset (If Applicable)	<table> <tr><td>1</td><td>Ambulance</td></tr> <tr><td>2</td><td>Helicopter</td></tr> <tr><td>3</td><td>Self Presentation</td></tr> <tr><td>4</td><td>Police</td></tr> <tr><td>5</td><td>Other</td></tr> <tr><td>6</td><td>Fixed Wing Aircraft</td></tr> </table>	1	Ambulance	2	Helicopter	3	Self Presentation	4	Police	5	Other	6	Fixed Wing Aircraft
1	Ambulance												
2	Helicopter												
3	Self Presentation												
4	Police												
5	Other												
6	Fixed Wing Aircraft												
Reported For Description	All Events For journeys involving more than one mode of transport the mode in which the greater distance of the journey was undertaken will be recorded (i.e. Fixed Wing transfer, with airport to ED by Ambulance)												
Expressed As	Categorical												

7.2.7 Referral Type

Fieldname	<i>reftype</i>												
Definition	Type of referral to hospital.												
Layout	AA String (multiple)												
Codeset (If Applicable)	<table> <tr> <td>Self</td><td>Self-Referral</td></tr> <tr> <td>Clinic</td><td>Accident & Medical Clinic</td></tr> <tr> <td>GP</td><td>General Practitioner</td></tr> <tr> <td>Hospital</td><td>Hospital Transfer</td></tr> <tr> <td>OtherHP</td><td>Other Health Practitioner</td></tr> <tr> <td>Unknown</td><td>Referral type not recorded</td></tr> </table>	Self	Self-Referral	Clinic	Accident & Medical Clinic	GP	General Practitioner	Hospital	Hospital Transfer	OtherHP	Other Health Practitioner	Unknown	Referral type not recorded
Self	Self-Referral												
Clinic	Accident & Medical Clinic												
GP	General Practitioner												
Hospital	Hospital Transfer												
OtherHP	Other Health Practitioner												
Unknown	Referral type not recorded												
Reported For	All Presentations												
Description	Type of referral made and recorded for admission to hospital for the patient. Categorised as a self referral i.e. walk-in or ambulance (patient transported in directly without consulting a medical professional), referred from a general practitioner, a medical professional, and/or transfer from another hospital.												
Expressed As	Categorical												

7.2.8 Reason for Presentation (Presenting Complaint)

Fieldname	<i>presreason</i>
Definition	Reason for referral, usually recorded in free text at triage.
Layout	(Free text, multiple)
Codeset (If Applicable)	Free text.
Reported For	All Presentations
Description	Referral reason as recorded in free text by triage nurse or ward clerk at triage.
Expressed As	String

7.2.9 ED Disposition

Fieldname	<i>eddispo</i>
Definition	Patient disposition following ED assessment and management.
Layout	AA String (Multiple)
Codeset (If Applicable)	0 = Admitted to Inpatient Short Stay Unit 1 = Admitted to Ward 2 = Admitted to Coronary Care or High Dependency Unit 3 = Admitted to Intensive Care Unit 4 = Admitted to Theatre 5 = Transfer to Other Hospital 6 = Discharged by EM 7 = Discharged by Inpatient Team 8 = Self Discharge 9 = Died in ED 10 = Not Recorded 11 = Not Available
Reported For Description	All Events Patient disposition following ED assessment and management; admitted to hospital as an inpatient, discharged or transferred to another Hospital
Expressed As	Categorical

7.3 Time to Reperfusion in Acute ST Elevation Myocardial Infarction (STEMI)

Acute ST Elevation Myocardial Infarction (STEMI) is defined in the 2013 ACC/AHA guidelines as³³: “a clinical syndrome defined by characteristic symptoms of myocardial ischemia in association with persistent electrocardiographic (ECG) ST elevation and subsequent release of biomarkers of myocardial necrosis”.

For clinical audit inclusion purposes the criteria below define ST Elevation Myocardial Infarction to be eligible for analysis:

- at least one of the following is required along with ischemic symptoms:
 - ECG changes indicative of ischemia:
 - New >2mm ST elevation in 2 contiguous lead groups (leads V2-V3)
 - New > 1mm ST elevation in 2 contiguous lead groups (all other chest leads/limb leads)
 - New Left Bundle Branch Block.
 - Development of pathologic Q waves on the ECG
 - Imaging evidence of new loss of viable myocardium or a new regional wall motion abnormality.
- In the most recent 2013 STEMI guidelines from the ACC/AHA the following are also now included as STEMI equivalents on the ECG:
 - ST depression in > 2 precordial leads V1-V4 may indicate transmural posterior STEMI
 - Multilevel ST depression with ST elevation in AVr in associated with L main stem or proximal LAD occlusion and should also be treated urgently with PCI
- Detection of typical rise and/or gradual fall of cardiac biomarkers (troponin) is also used to diagnose acute myocardial infarction, however this information is not available when a patient arrives in the ED and as these do not influence the decision for acute reperfusion therapy at the time of arrival they are not relevant for this audit.

Reperfusion:

Prompt restoration of myocardial blood flow is essential to optimize myocardial salvage and to reduce mortality. A decision must be made as soon as possible by the treating clinician as to whether reperfusion will be achieved with thrombolytic agents or primary (direct) percutaneous coronary intervention (PCI) or coronary artery bypass grafting (CABG), depending on what is locally available. Reperfusion therapy for STEMI aims to open compromised coronary arteries and to diminish the damage caused by reduced blood flow to the myocardium.

Multiple randomized clinical trials have shown that reperfusion therapy provided to eligible patients presenting with STEMI reduces the risk of death due to all causes. The timeliness of reperfusion therapy is of central importance, because the benefits of therapy diminish rapidly with delays in treatment.^{34, 35}

Thrombolysis:

Not all patients having STEMI are suitable for thrombolytic treatment. Patients are eligible for thrombolytic treatment if:

- They have definite signs and symptoms of STEMI including typical evidence on the electrocardiogram (ECG) as detailed above.
- They present for treatment within 12 hours of symptoms onset
- There is no reason why thrombolytic treatment might be harmful to them, and
- There is no good reason to delay giving thrombolytic treatment (i.e. work-up for alternative causes of chest pain where thrombolysis treatment would not be indicated – Aortic Dissection, Pericarditis or active haemorrhage).
- The facility does not have the capability of expert, prompt intervention with primary PCI within 90 minutes of first medical contact.
- Patients who present to a facility in which the relative delay necessary to perform primary PCI (the expected door-to-balloon time minus the expected door-to-needle time) is greater than one hour.

The time interval from first patient contact to initiation of thrombolytic drug infusion should be within 30 minutes of first medical contact (arrival at hospital) (US ACC/AHA Guidelines³⁶, UK National Service Framework for Coronary Heart Disease: Chapter 5³⁷) or within 60 minutes of calling professional help (UK³⁷) or within 60 minutes of presentation to hospital (Aus, NZ)

- Contra-Indications to Thrombolysis include:³⁸
 - **Absolute:** Current active haemorrhage, significant closed head or facial trauma < 3 months ago, suspected aortic dissection, any prior ICH, Ischaemic Stroke < 3 months, known structural cerebral vascular lesion, known malignant intracranial neoplasm.
 - **Relative:** Current anticoagulants, non-compressible vascular punctures, recent major surgery < 3 weeks, traumatic or prolonged (>10 mins) CPR, recent (< 4 weeks) GI bleed, severe HTN, Previous streptokinase allergy, proven strep throat infection, pregnancy.

Percutaneous coronary intervention:

If high-quality PCI is available, multiple randomized trials have shown enhanced survival after the first hour of symptoms, compared to thrombolysis, with a lower rate of intracranial haemorrhage and recurrent MI. 2009 ACC/AHA Guidelines for the Management of Patients with STEMI³⁶ recommends the use of primary PCI as a first option, for any patient with an acute STEMI who can undergo the procedure within 90 minutes of first medical contact, by persons skilled in the procedure. Australia / NZ guidelines³⁸ are as figure 3 below:

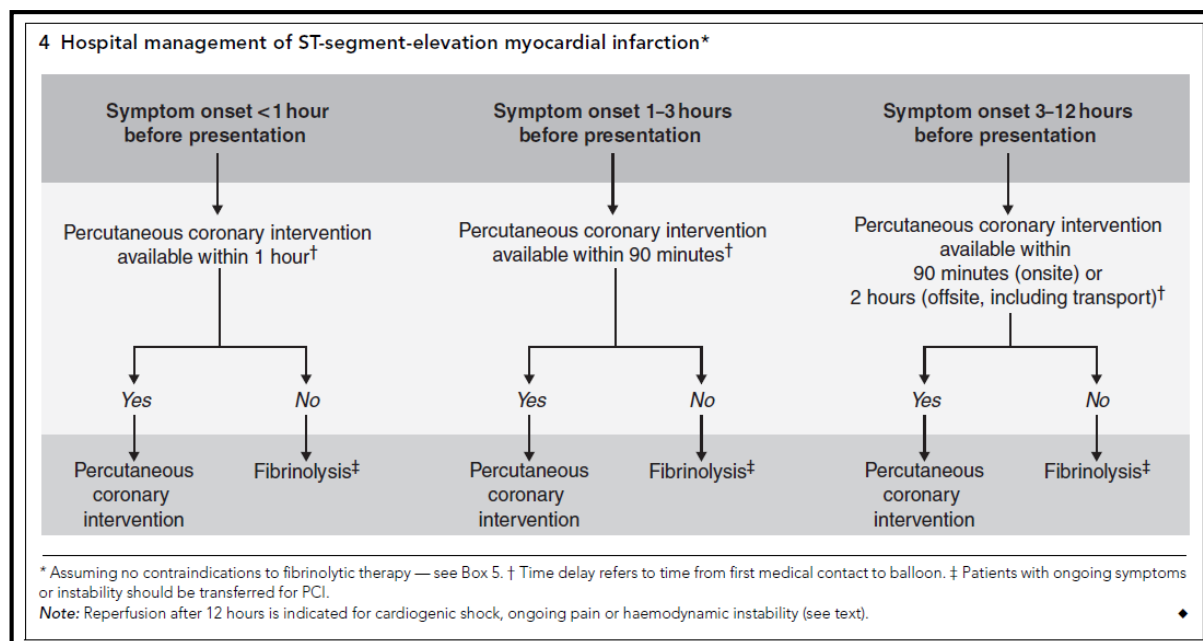


Figure 3 (National Heart Foundation Australia et al)

ED Crowding and Hospital Access Block have been associated with adverse outcomes to time to reperfusion in STEMI. Schull et al³⁹ carried out a retrospective study looking at ED crowding and delay to thrombolysis for STEMI. They defined crowding as (hospital) network ambulance diversion – diversion of over 60% was high crowding, < 60% moderate crowding, 0% was no crowding. During times of moderate crowding there was an increased median door-to-needle time of 3 minutes and during times of high crowding there was a significant increase in door to needle times of 5.8 minutes.

There is level one evidence to support the concept that the earlier the reperfusion the better the outcome for patients.

When looking at time from patient arrival in the ED to initiation of reperfusion therapy for eligible cases, various time based performance measures are used worldwide: ^{7, 36, 38, 40, 41.}

- 1) Door to Needle Time in Thrombolysis < 30 minutes (US, UK, Canada)
- 2) Door to Needle time in Thrombolysis <60 minutes (NZ, Aus)
- 3) Call to Needle Time in Thrombolysis < 60 minutes (UK)
- 4) Door to First Balloon Inflation Time for Primary PCI < 90 minutes (US, UK, Canada, Aus, NZ)
- 5) Call to First Balloon Inflation Time for Primary PCI < 150 minutes (UK)

Performance Measures definitions:

The 2008 ACC/AHA STEMI/NSTEMI Performance Measures⁴² are defined as follows:

“Time to fibrinolytic therapy Median time from hospital arrival to administration of fibrinolytic therapy in AMI patients with ST-segment elevation or LBBB on the ECG performed closest to hospital arrival time: AMI patients with ST-segment elevation or LBBB on the ECG closest to hospital arrival time receiving fibrinolytic therapy during the hospital stay with a time from hospital arrival to fibrinolysis of 30 min or less.”

“Time to PCI Median time from hospital arrival to primary PCI in AMI patients with ST-segment elevation or LBBB on the ECG performed closest to hospital arrival time: AMI patients with ST-segment elevation or LBBB on the ECG closest to hospital arrival time receiving primary PCI during the hospital stay with a time from hospital arrival to PCI of 90 min or less.”

“Reperfusion Therapy” AMI patients with ST-segment elevation or LBB on the ECG performed closest to arrival receiving either fibrinolysis or primary PCI or who are transferred to another facility for primary PCI.”

- 1) ACC/AHA 2013 guidelines still recommend that thrombolysis be provided within 30 minutes of first medical system contact and that primary PCI be provided within 90 minutes of first medical system contact for patients presenting with STEMI³³
- 2) ACHS KPI's measure thrombolysis within 60 minutes of presentation for AMI and also for Primary PCI ⁷
- 3) NHS (UK) KPI is 30 minutes for Thrombolysis and 60 minutes for PCI (used in MINAP)

As a result of the above discussion the times used as 'Time to Reperfusion for STEMI' benchmarks for NZED Performance Measures are:

Time to Thrombolysis < 60 minutes

Time to PCI < 90 minutes

Appropriateness of Thrombolysis: With any time pressured quality indicator there is the risk that in the rush to provide care within a certain time frame, inappropriate treatment is delivered. To be eligible for the assessment of appropriateness of thrombolysis, there is a STEMI on arrival in ED but no reperfusion therapy is given or thrombolytic therapy is given when there is no STEMI on arrival. As PCI and CABG are not provided in the ED, then the appropriateness or not of these acute reperfusion methods is beyond the scope of this audit. Note that if thrombolytic therapy is delivered outside the ED then this should be included in the audit of appropriateness of thrombolysis as there was the potential that this therapy should have been given in the ED. There are currently no standards for the proportion of patients that should receive/not receive thrombolysis appropriately. Ideally no patient should receive inappropriate thrombolysis and all eligible patients should receive it.

Therefore the standard for appropriateness of Thrombolysis for this audit is 100%.

AUDIT ELIGIBILITY CRITERIA: The following variables will be recorded as part of assessing eligibility for inclusion into the data collection for time to reperfusion for STEMI and appropriateness of reperfusion using thrombolysis.

There must be ECG or Echo evidence of STEMI on arrival at the ED AND an attempt is made to re-perfuse the myocardium acutely.

Acute reperfusion means either thrombolysis in the ED during this presentation or thrombolysis, PCI or CABG immediately on leaving the ED (i.e.: patient transferred from ED directly to the cardiac catheter laboratory for PCI, or operating theatre for CABG, or receives thrombolysis in the coronary care unit or other destination as soon as possible after arrival there from leaving the ED)

The following are definitions pertinent to the data collection tool for Time to Reperfusion in Myocardial Infarction:

7.3.1 Duration of Ischaemic Symptoms

Fieldname	<i>durationsympt</i>
Definition	How long the symptoms consistent with acute myocardial infarction were present prior to arrival in the ED.
Layout	AA Sting (Multiple)
Codeset (If Applicable)	0 = Less than 12 hours 1 = More than 12 hours 2 = No symptoms 3 = Not Recorded 4 = Not Available
Reported For	Includes: All Patients eligible for either the time to reperfusion or the appropriateness of thrombolysis outcomes (see criteria above)
Description	The risks or reperfusion therapy outweigh the benefit if therapy starts more than 12 hours after symptom onset. The exact onset of time of symptoms may not be recorded in the notes so a broad inclusion criterion is preferred for this audit. Symptoms of myocardial infarction include chest pain, shortness of breath, syncope/cardiac arrest, back, neck, shoulder or abdominal pain, sweating, general malaise, headache, and others. The first onset of any continuous symptom present for at least 20 minutes until the time of presentation to ED and consistent with acute myocardial infarction should be assessed for the duration of ischaemic symptoms.
Expressed As	Categorical

7.3.2 First ECG or Echo on Arrival

Fieldname	<i>firstecgecho</i>
Definition	A description of the changes present on the first Electro or Echocardiogram done in the ED.
Layout	AA Sting (Multiple)
Codeset (If Applicable)	0 = > 1mm ST Segment elevation in 2 contiguous limb leads 1 = > 2mm ST segment elevation in 2 contiguous chest leads 2 = New Left Bundle Branch Block 3 = New ST Depression in V1-V3 4 = ST Elevation AVR with ST Depression chest and limb leads 5 = Echo New regional wall motion abnormality 6 = Echo New loss of viable myocardium 7 = None of the Above 8 = Not Recorded 9 = Not Available
Reported For	Includes: All Patients eligible for either the time to reperfusion or the appropriateness of thrombolysis outcomes (see criteria above)
Description	The changes seen on ECG or Echocardiogram that represent STEMI will differ depending on the site of the myocardial infarction (which of the coronary arteries is involved).
Expressed As	Categorical

7.3.3 Time of First ECG

Fieldname	<i>timefirstECG</i>
Definition	The time the first ECG or echo is done following arrival in ED.
Layout	DD/MM/CCYY HH:MM (Time: 15 characters with a space between date and time values)
Codeset (If Applicable)	n/a
Reported For	Includes: All Patients with presenting with possible acute myocardial infarction who get an ECG (or echo)
Description	The time the first ECG (or echo if this occurred prior to ECG) was done in ED. If this is clearly incorrect (time prior to presentation time) or the ECG was done prehospital then the time used should be the presentation time. If there is no time on the ECG and this cannot be determined/approximated from the clinical notes then this should be left blank.
Expressed As	Numeric (Date/Time)

7.3.4 Diagnostic ECG or Echo on Arrival

Fieldname	<i>diagnosticcegecho</i>
Definition	A description of the changes present on the first Electro or Echocardiogram done in the ED that is diagnostic of STEMI
Layout	AA Sting (Multiple)
Codeset (If Applicable)	0 = > 1mm ST Segment elevation in 2 contiguous limb leads 1 = > 2mm ST segment elevation in 2 contiguous chest leads 2 = New Left Bundle Branch Block 3 = New ST Depression in V1-V3 4 = ST Elevation AVR with ST Depression chest and limb leads 5 = Echo New regional wall motion abnormality 6 = Echo New loss of viable myocardium 7 = None of the Above 8 = Not Recorded 9 = Not Available
Reported For	Includes: All Patients eligible for either the time to reperfusion or the appropriateness of thrombolysis outcomes (see criteria above)
Description	Sometimes although symptoms of AMI are present prior to arrival in ED the initial ECG on arrival is not diagnostic of STEMI. However over time in the ED the ECG may change to become diagnostic of STEMI, or an echo is done that is consistent with STEMI and the patient may go on to receive reperfusion therapy. This field is designed to capture these patients.
Expressed As	Categorical

7.3.5 Time of Diagnostic ECG

Fieldname	<i>timediagECG</i>
Definition	The time the first ECG or echo that shows STEMIT is done following arrival in ED.
Layout	DD/MM/CCYY HH:MM (Time: 15 characters with a space between date and time values)
Codeset (If Applicable)	n/a
Reported For	Includes: All Patients with presenting with possible acute myocardial infarction who get an ECG (or echo)
Description	The time the first ECG (or echo if this occurred prior to ECG) that shows changes consistent with STEMI was done in ED. If this is clearly incorrect (time prior to presentation time) or the ECG was done prehospital then the time used should be the presentation time. If there is no time on the ECG and this cannot be determined/approximated from the clinical notes then this should be left blank.
Expressed As	Numeric (Date/Time)

7.3.6 Contraindications to Thrombolysis

Fieldname	<i>diagnosticcegecho</i>
Definition	Clinical situations that make the risk of thrombolytic therapy outweigh the potential benefits
Layout	AA Sting (Multiple)
Codeset (If Applicable)	0 = None 1 = Any prior Intracerebral haemorrhage 2 = CVA <= 3 months 3 = Closed Head Injury <= 3months 4 = Closed Facial Injury <= 3 months 5 = Suspected Aortic Dissection 6 = Active Bleeding 7 = Known structural cerebrovascular lesion 8 = Known malignant intracranial neoplasm 9 = Current anticoagulation 10 = Non-compressible vascular puncture 11 = Major surgery <= 3 weeks 12 = CPR traumatic or prolonged >10 mins 13 = GI Bleed in the last <= 4 weeks 14 = Severe HTN – systolic >=180 15 = Streptokinase allergy* 16 = Pregnancy 17 = Proven Strep throat infection* 18 = Not Recorded 19 = Not Available
Reported For	Includes: All Patients eligible for either the time to reperfusion or the appropriateness of thrombolysis outcomes (see criteria above)
Description	Thrombolytic therapy carries a risk of causing major bleeding. Clinical situations where the patient has an increased risk of harm for major bleeding as listed above are contra-indications for thrombolytic therapy and alternative methods of reperfusion should be used if available. *Streptokinase allergy or proven streptococcal throat infection are only contraindications to the use of streptokinase.
Expressed As	Categorical

7.3.7 First Reperfusion Time

Fieldname	<i>firstreperftime</i>
Definition	Documented time in notes of the first reperfusion therapy delivered
Layout	DD/MM/CCYY HH:MM (Date and Time: 15 characters separated by a space between year and hour values)
Codeset (If Applicable)	n/a
Reported For	Includes: All Patients who receive reperfusion therapy Excludes: All patients who are not given reperfusion therapy
Description	The time thrombolytic medication was administered to the patient (whether this is in the Emergency Department, CCU or elsewhere). For percutaneous intervention (PCI) this is taken as the time the first reperfusion device (angioplasty balloon, stent clot evacuation or other) deployed to obtain coronary artery flow again.
Expressed As	Numeric (Date/Time)

7.3.8 Time to Thrombolysis

Fieldname	<i>timetothromb</i>
Definition	Time from arrival to thrombolytic therapy delivery
Layout	MMMM (Minutes)
Reporting	Mandatory
Frequency	Regularly
Reported For	Includes: All Patients with STEMI who receive Thrombolysis Excludes: Patients who do not have STEMI who receive thrombolysis and patients who have STEMI who receive other reperfusion therapy (or none).
Quality Measure	<i>(7.3.7) First Reperfusion Time – (2.3) ED Presentation Time (when first reperfusion = thrombolysis)</i>
Expressed As	Numeric (Time)
Numerator	Number of eligible patients meeting target time to thrombolysis
Denominator	Total number of eligible patients
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long times</i> Proportion meeting target time for thrombolysis %(95%CI)

7.3.9 Time to PCI

Fieldname	<i>timetopci</i>
Definition	Time from arrival to percutaneous coronary intervention device deployment, obtaining coronary artery flow again
Layout	MMMM (Minutes)
Reporting	Mandatory
Frequency	Regularly
Reported For	Includes: All Patients with STEMI who receive PCI Excludes: Elective PCI and patients with STEMI that receive either no reperfusion therapy or reperfusion therapy other than PCI
Quality Measure	<i>(7.3.7) First Reperfusion Time – (2.3) ED Presentation Time (when first reperfusion = PCI)</i>
Expressed As	Numeric (Time)
Numerator	Number of eligible patients meeting target time to PCI
Denominator	Total number of eligible patients
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long times</i> Proportion meeting target time to PCI % (95%CI)

7.3.10 Appropriate Thrombolysis

Fieldname	<i>Applysis</i>
Definition	Whether thrombolysis was given when it should be or not given when there was a contraindication
Layout	AA (String)
Reporting	Undecided
Frequency	Undecided
Reported For	Includes: All Patients with suspected STEMI who are considered for thrombolysis Excludes: Patients who are not considered for thrombolysis (ie: go directly to PCI).
Quality Measure	<i>(7.3.7) First Reperfusion Time – (2.3) ED Presentation Time (when first reperfusion = Thrombolysis)</i>
Expressed As	Categorical (Dichotomous)
Numerator	Number of eligible patients who either got thrombolysis when it was indicated or did not get thrombolysis when it was not indicated
Denominator	Total number of eligible patients
Summary Statistic	Proportion with appropriate thrombolysis %(95%CI)

7.4 Time to Analgesia for ED Patients

“This is a common quality measure in ED's. Ideally time to adequate analgesia should include time to performance of a pain score, administration of an appropriate analgesic, and re-assessment of the pain score. In this respect, this activity is about the timely performance of quality care and not simply a time stamp.”²

Over half of all patients presenting to ED have pain.^{43, 44} Pain, as defined by the Oxford English Dictionary, is a “highly unpleasant physical sensation caused by illness or injury” or “mental suffering or distress”. It is also a highly subjective entity, and can be difficult to quantify. From the clinicians perspective severe pain should necessitate prompt relief, as it is ethical and humane practice to relieve suffering.

Timeliness of analgesia delivery in the ED is referenced through many of our daily working standards. The Australasian Triage Scale⁴⁵ (by which the acuity of every patient entering the ED is assessed) categorises **very severe pain of any cause** a triage category of 2, and therefore needing assessment and treatment by a Doctor within 10 minutes.

The Australasian College of Emergency Medicine (ACEM) who oversee the governance of emergency medicine in Australia and NZ have a policy on acute pain management.⁴⁶ Point 3.3 states: “Emergency departments are responsible for regular monitoring of key clinical indicators related to best quality pain management (assessment, timeliness to intervention, and reassessment)”.

The above policy is based on a consensus document (Acute Pain Management; Scientific Evidence) released by the Australian National Health and Medical Research Council in collaboration with the Australasian College of Anaesthetists and the Faculty of Pain Medicine in 2010.⁴⁷ This comprehensive document reiterates the need for timely relief of pain.

Studies have been done in many other countries in the world including Australia, Britain, France and America on the timeliness of analgesia delivery in those patients presenting in acute pain to ED. These have confirmed that pain relief is not adequate in ED⁴⁸ and people can wait for a long time to receive any pain relief. Grant⁴⁹ showed a 68% non-compliance with suggested guidelines for pain relief, and a significant delay in pain relief delivery (mean waiting time 3 hours and 46 minutes for moderate pain).

There are many diverse factors affecting the delivery of analgesia, not just the fact it is a challenging subjective entity for the clinician at times! A literature review by Motov⁵⁰ looked at problems of and barriers to pain management in ED. They found problems included “a failure to acknowledge pain, a failure to assess initial pain, failure to implement pain management guidelines, failure to document pain and a failure to meet patient expectation”. Barriers to pain management included “ethnic and racial bias, gender bias, age bias, inadequate knowledge and training of ED Physicians, opiophobia, ED environment and culture”. Arendts⁵¹ showed there were multiple factors causing delay to opiate analgesia delivery, those being statistically significant were age, triage code, seniority of the treating doctor and ultimate disposition.

Ethnicity:

In the New Zealand 2006 Census, “European remained the largest of the major ethnic groups, with 67.6% of the population; the Maori ethnic group is the second largest 14.6%”⁵². Health inequalities in New Zealand are well documented,⁵³ in particular, health inequities by ethnicity. When compared to American and Canadian Indigenous groups, Australian and NZ indigenous groups suffer much higher disease-specific mortality rates.⁵⁴ Inequities in analgesia delivery in other countries (especially America) are documented.^{48, 55-57} In a review of the literature in 2001, Todd et al⁵⁸ state “currently available research suggests that it is not the failure of physicians to adequately assess pain, but the failure to administer analgesics that is the principal contributor to oligoanalgesia among patients of minority ethnicity”. However not all international studies have found this.⁵⁹ Ethnic disparity among analgesia delivery in EDs has not been studied before in NZ, although this is the subject of current research.

Overcrowding:

Only one Australasian study has compared ED overcrowding and time to analgesia.⁶⁰ Their conclusions were “No relationship between workload / overcrowding and Time to Analgesia was observed; however, there were delays to analgesia associated with age, non-English-speaking background and delay to pain assessment.” However in other countries long waits in an overcrowded, overburdened ED correlates with delays for critical interventions and clinically orientated outcomes such as pain relief.^{61, 62} A further study by Pines et al⁶³ who assessed 13,758 patient with severe pain in the emergency department found “ED crowding was associated with poor quality of care in patients with severe pain, with respect to total lack of treatment and delay until treatment”.

Extremes of age:

Other international studies have looked at time to analgesia in ED for those who have a fracture neck of femur. Hwang et al⁶⁴ found older adults with hip fracture are at risk for underassessment of pain, considerable delays in analgesic administration after pain was identified and treatment with inappropriate medications. Over a third did not get any pain relief at all. When the ED is crowded (census levels greater than 120%) there was a significant association with poor or no pain documentation and longer times to pain assessment. The Society for Academic Emergency Medicine (SAEM) Geriatric Task Force⁶⁵ noted analgesia delivery to be a quality gap in elderly people. They have derived 6 quality indicators for geriatric pain relief in ED. These include if an older adult presents to the ED, then a formal assessment for the presence of acute pain should be documented within 1 hour of arrival to the ED. If an older adult presents with moderate to severe pain (i.e., a numeric rating scale score of 4 or higher out of 10), then pain treatment should be initiated (or the provider should document why treatment was not initiated). Oligoanalgesia is also a noted concern in children.⁴⁸

The Clinical Standards for the College of Emergency Medicine (UK)⁶⁶ suggest the following standards for pain management:

Standards

1. Patients in severe pain (pain score 7 to 10) should receive appropriate analgesia, according to local guidelines,
 - 50% within 20 mins of arrival or triage whichever is the earliest
 - 75% within 30 mins of arrival or triage whichever is the earliest
 - 98% within 60 mins of arrival or triage whichever is the earliest
2. Patients with moderate pain (pain score 4 to 6) should be offered or receive analgesia, according to local guidelines,
 - 75% within 30 mins of arrival or triage whichever is the earliest
 - 90% within 60 mins of arrival or triage whichever is the earliest
3. 90% of patients with severe pain should have documented evidence of re-evaluation and action within 60 minutes of receiving the first dose of analgesic
4. 75% of patients with moderate pain should have documented evidence of re-evaluation and action within 60 minutes of receiving the first dose of analgesic
5. If analgesia is not prescribed and the patient has moderate or severe pain the reason should be documented in the notes.

(CEM UK Clinical Standards)

Time to Analgesia:

The length of time it takes from presentation to the Emergency Department to receive analgesia for a painful condition. These have been chosen to cover all age groups.

Time to analgesia for the purposes of these audits:

- Less than 30 minutes in those with severe pain
- Less than 1 hour in those with moderate pain.

Adequacy of Analgesia:

Adequate analgesia should decrease a patient's pain by a clinically significant amount *and* to a level that is not more than mild. Kelly et al⁶⁷ found this minimum clinically detectable difference to be 13mm on a 100mm visual analogue scale for pain, or 2 points on a categorical scale from 0-10. 30mm is the clinically important difference.

As defined by Jao et al⁶⁸: "Reduction in the triage pain score by ≥ 2 points and to a level <4 ". To achieve adequate analgesia means moving from one severity category to the next lower **and** a severity category of mild.

ELIGIBILITY CRITERIA: The following variables will be recorded as part of assessing eligibility for inclusion into the data collection (also will assess appropriateness of treatment given as well as timeliness).

Pain on Arrival to ED

• No	
• Yes	X
• Not Recorded	
• Not Available	

Given Analgesia in ED

• No	
• Yes	X
• Declined	
• Not Recorded	
• Not Available	

The following are definitions pertinent to the data collection tool for Time to Analgesia for Emergency Department patients:

7.4.1 Pre-Hospital Analgesia Admin

Fieldname	<i>phanalg</i>
Definition	The source of any pain relief prior to arrival at hospital
Layout	NN (Number: 2 Characters)
Codeset (If Applicable)	1= No 2= Yes 3 = Patient Declined 4 = Not Recorded 5 = Not Available
Reported For	Includes: All ED patients presenting with pain Excludes: ED patients presenting without pain
Description	Capturing those patients with the triage diagnosis of a painful condition, who have had analgesia before arriving at the hospital (either Self, Ambulance, GP or Other). This is an attempt at having the severity of their pain settled with pain relief before coming to the hospital. This may also affect the patients' pain score on arrival to hospital.
Expressed As	Categorical

7.4.2 Triage Pain Score ED

Fieldname	<i>trips</i>
Definition	Whether patients have or have not had their pain score assessed and recorded at triage
Layout	NN (Number: 2 Characters)
Codeset (If Applicable)	1 = Yes 2 = No 3 = Unable to Assess 4 = Patient Declined Assessment 5 = Not Available
Reported For	Includes: All ED patients presenting with pain Excludes: ED patients presenting without pain
Description	This is an attempt at having the severity of the patient's pain quantified, in order to assess urgency of review.
Expressed As	Categorical

7.4.3 Time First Pain Score ED

Fieldname	<i>firstpstime</i>
Definition	The first time the patients pain score is assessed in ED
Layout	DD/MM/CCYY HH:MM (Date and Time: 15 characters separated by a space between year and hour values)
Codeset (If Applicable)	n/a
Reported For	Includes: All ED patients presenting with pain Excludes: ED patients presenting without pain
Description	It will be the first documented timed entry in the notes detailing that some assessment of the patients' pain has taken place.
Expressed As	Numeric (Time)

7.4.4 Time to First Pain Score ED

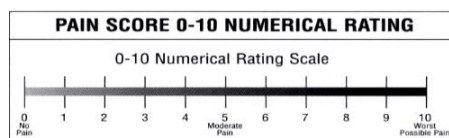
Fieldname	<i>timetofirstps</i>
Definition	Time from presentation in ED to the triage assessment of the pain score
Layout	MMMM (Minutes)
Reporting	Mandatory
Frequency	Regularly
Reported For	Includes: All ED patients presenting with pain Excludes: ED patients presenting without pain
Quality Measure	<i>(7.4.3) Time First Pain Score ED – (2.3) ED Presentation Time</i>
Expressed As	Numeric (Time)
Numerator	Number of eligible patients meeting target time to triage pain score
Denominator	Total number of eligible patients
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long times</i> Proportion meeting target time to triage pain score %(95%CI)

7.4.5 Type of Pain Score First ED

Fieldname	<i>typfirstps</i>
Definition	The type of pain scale used to quantify any pain perceived by the patient
Layout	NN (Number: 2 Characters)
Codeset (If Applicable)	1 = Verbal Numeric Rating Pain Scale (1-10) 2 = Wong-Baker Faces Pain Scale (or variation on this) 3 = Visual Analogue scale 4 = Categorical (Mild, Moderate, Severe) 5 = Not Recorded 6 = Unable to assess 7 = Declined assessment 8 = Not Available
Reported For	Includes: All ED patients presenting with pain Excludes: ED patients presenting without pain
Description	This is an attempt at having the severity of pain quantified, in order to assess urgency of review and analgesia provision. Included along with data points 7.4.9 and 7.4.9 to allow some assessment of adequacy of analgesia over the course of the ED patients' journey.
Expressed As	Categorical

7.4.6 Raw Pain Score First ED

Fieldname	<i>rawtrips</i>
Definition	The severity of the pain recorded as defined by one of the following scales
Layout	String (maximum 8 characters)
Codeset (If Applicable)	Not Recorded (blank cell) Verbal Numeric Rating Pain Scale: Number 1-10 Figure 4

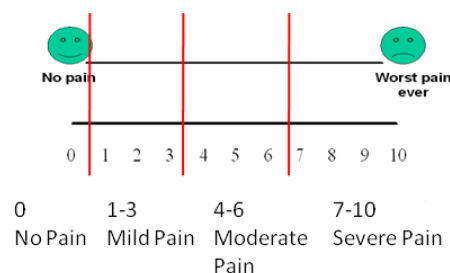


Wong-Baker Faces Pain Scale: Face number 1-6 Figure 5



Face 1	Face 2	Faces 3 & 4	Faces 5 & 6
No Pain	Mild Pain	Moderate Pain	Severe Pain

Visual Analogue Scale: 1-10 centimetres Figure 6



Categorical: Mild, Moderate, Severe
No pain
Mild pain
Moderate Pain
Severe Pain

Reported For	Includes: All ED patients presenting with pain Excludes: ED patients presenting without pain
Description	This is an attempt at having the severity of pain quantified, in order to assess urgency of review and analgesia provision. The raw score written down in the notes is a free text entry into the database.
Expressed As	String (either number as text or text value)

7.4.7 Pain Score Categorical First ED

Fieldname	<i>cattrips</i>
Definition	A categorical score from the previous raw pain score data (7.4.8) for the purposes of grouping people together for analysis.
Layout	NN (Number: 2 Characters)
Codeset (If Applicable)	0 = No pain 1 = Mild pain 2 = Moderate pain 3 = Severe pain 4 = Unable to Assess 5 = Declined Assessment 6 = Not Recorded 7 = Not Available
Reported For	Includes: All ED patients presenting with pain Excludes: ED patients presenting without pain
Description	CEM UK and ACHS give guidelines on how promptly analgesia should be given in the emergency Department, and stratify into mild, moderate and severe pain. For purposes of analysis and comparison we will do the same here. To use the categorical scale for calculating adequacy of analgesia a numeric value will be generated automatically for moderate and severe pain entered in this field. The value for moderate pain is 5 and for severe pain is 8, being the middle values in the numeric pain scale for these degrees of pain respectively. These are termed “estimated pain scores” on the data collection tool.
Expressed As	Categorical

7.4.8 First ED Analgesia Time

Fieldname	<i>analgttime</i>
Definition	The time analgesia first administered at
Layout	DD/MM/CCYY HH:MM (Date and Time: 15 characters separated by a space between year and hour values)
Codeset (If Applicable)	n/a
Reported For	Includes: All ED patients presenting with pain who were given analgesic agents in the ED Excludes: ED patients presenting without pain and patients who did not receive analgesia in the ED
Description	Usually documented in patients notes, or electronic capture if electronic prescribing available.
Expressed As	Numeric (Time)

7.4.9 Time to First ED Analgesia

Fieldname	<i>timetoedanalg</i>
Definition	Time from arrival to first analgesia given in the emergency department
Layout	MMMM (Minutes)
Reporting	Mandatory
Frequency	Regularly
Reported For	Includes: All ED patients presenting with pain who were given analgesic agents in the ED Excludes: ED patients presenting without pain and patients who did not receive analgesia in the ED
Quality Measure	<i>(7.4.8) First ED Analgesia Time – (2.3) ED Presentation Time</i>
Expressed As	Numeric (Time)
Numerator	Number of eligible patients meeting target time to analgesia
Denominator	Total number of eligible patients
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long times</i> Proportion meeting target time for analgesia %(95%CI)

7.4.10 Type of Analgesia

Fieldname	<i>analgtypes</i>
Definition	Whether the patient was given analgesia or not
Layout	NN (Number: 2 Characters)
Codeset (If Applicable)	1= None 2 = Paracetamol 3 = Entonox 4 = Pentrox 5 = Morphine 6 = Fentanyl 7 = Pethidine 8 = Ketamine 9 = Ibuprofen 10 = Diclofenac 11 = Codeine Phosphate 12 = Paracetamol and Codeine Combination 13 = Tramadol 14 = Other NSAID 15 = Other Opiate 16 = Mylanta or Gaviscon 17 = GTN 18 = Buscopan 19 = Nerve Block 20 = Patient Declined 21 = Not Recorded 22 = Not Available
Reported For	Includes: All ED patients presenting with pain Excludes: ED patients presenting without pain
Description	Usually documented in patients notes as either refused (R) or administered (timed and signed for by administrator). - Analgesia not prescribed = none (will be excluded anyway) - Analgesia prescribed but not given or no admin time = Not Recorded
Expressed As	Categorical

7.4.11 Route of Analgesia

Fieldname	<i>analgroute</i>
Definition	The route of analgesia if given in the ED.
Layout	NN (Number: 2 Characters)
Codeset (If Applicable)	0 = None 1 = Oral 2 = Intravenous 3 = Inhalational 4 = Intramuscular 5 = Intraosseous 6 = Subcutaneous 7 = Topical 8 = Intranasal 9 = Sublingual 10 = Rectal 11 = Nerve Block 12 = Declined 13 = Not Recorded 14 = Not Available
Reported For	Includes: All ED patients presenting with pain Excludes: ED patients presenting without pain
Description	Usually documented in patients notes as refused (R) or administered (timed and signed for by administrator). • Analgesia prescribed but no route and signed for = Not Recorded • Analgesia not prescribed = None (will be excluded anyway) • Analgesia prescribed but not given or no admin time = Not Recorded
Expressed As	Categorical

7.4.12 Time First IV Opiate Analgesia

Fieldname	<i>firstivoatime</i>
Definition	Time first IV opiate dose given
Layout	DD/MM/CCYY HH:MM (Date and Time: 15 characters separated by a space between year and hour values)
Codeset (If Applicable)	n/a
Reported For	Includes: All ED patients presenting with pain Excludes: ED patients presenting without pain
Description	Usually documented in patients notes or captured electronically if electronic prescribing.
Expressed As	Numeric (Time)

7.4.13 Pain Score Reassessment: First Post-Analgesia

Fieldname	<i>reassessps</i>
Definition	Those patients who have or have not had their pain score reassessed and recorded after analgesia. The first reassessment score post-analgesia will be recorded.
Layout	NN (Number: 2 Characters)
Codeset (If Applicable)	1 = Not Recorded 2 = Yes 3 = Unable to assess 4 = Declined assessment 5 = Not Available
Reported For	Includes: All ED patients presenting with pain Excludes: ED patients presenting without pain
Description	This is an attempt at having the severity of pain quantified, in order to assess urgency of further review, the need for further analgesia provision and the adequacy of the initial analgesia. Pain is a changing entity and it is important to be aware that for adequate analgesia re-assessment is needed.
Expressed As	Categorical

7.4.14 Time Pain Score Re-Assessed: First Post- Analgesia

Fieldname	<i>reassesspstime</i>
Definition	The first time the patients pain score is first reassessed after analgesia is given
Layout	DD/MM/CCYY HH:MM (Date and Time: 15 characters separated by a space between year and hour values)
Codeset (If Applicable)	n/a
Reported For	Includes: All ED patients presenting with pain Excludes: ED patients presenting without pain
Description	Usually documented in patients notes. This may be difficult to capture. If the patient is on IV opiates, it is the time the first pain score re-assessment that is done from commencement of IV opiates. If not it will be the first documented entry in the notes detailing that some re-assessment of the patients pain has taken place.
Expressed As	Numeric (Time)

7.4.15 Time to Pain Score Reassessment: First Post-Analgesia

Fieldname	<i>timetoressessps</i>
Definition	Time from first analgesia given in the emergency department to reassessment of the pain score
Layout	MMMM (Minutes)
Reporting	Mandatory
Frequency	Regularly
Reported For	Includes: All ED patients presenting with pain Excludes: ED patients presenting without pain
Quality Measure	(7.4.14) Time pain score reassessed: first post-analgesia - (7.4.8) First ED Analgesia Time This may be a (poor) proxy measure to assess adequacy of analgesia.
Expressed As	Numeric (Time)
Numerator	Number of eligible patients meeting target time to pain score reassessment: first post analgesia
Denominator	Total number of eligible patients
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long times</i> Proportion meeting target time for pain score reassessment (95%CI)

7.4.16 Raw Pain Score: Lowest ED

Fieldname	<i>lowestpsraw</i>
Definition	The documented lowest severity pain recorded during the patients ED stay.
Layout	NN (Number: 2 Characters)
Codeset (If Applicable)	Not Recorded (blank cell) Verbal Numeric Rating Pain Scale (Figure 4) Wong-Baker Faces Pain Scale (Figure 5) Visual Analogue Scale (Figure 6) Categorical: Mild, Moderate, Severe
Reported For	Includes: All ED patients presenting with pain Excludes: ED patients presenting without pain
Description	Data is entered free text, either as a number or text of the information recorded in the patient notes. This enables a calculation of the adequacy of analgesia given. Using the method described by Jao, adequate analgesia is: "Reduction in the triage pain score by ≥ 2 points and to a level <4 ". This means moving from one severity category to at least the next lower and a documented severity category of mild during the ED stay.
Expressed As	String (either number as text or text value)

7.4.17 Pain Score Categorical: Lowest ED

Fieldname	<i>lowestpscat</i>
Definition	A categorical score from the previous raw pain score data for the purposes of grouping people together for analysis. This will denote the lowest severity of the patients pain during their stay in ED
Layout	NN (Number: 2 Characters)
Codeset (If Applicable)	0 = No pain 1 = Mild pain 2 = Moderate pain 3 = Severe pain 4 = Not Recorded 5 = Unable to Assess 6 = Declined Assessment 7 = Not Available
Reported For	Includes: All ED patients presenting with pain Excludes: ED patients presenting without pain
Description	This enables a calculation of the adequacy of analgesia given. Using the method described by Jao, ⁶⁸ adequate analgesia is: "Reduction in the triage pain score by ≥ 2 points and to a level <4 ". This means moving from one severity category to at least the next lower and a documented severity category of mild during the ED stay (7.4).
Expressed As	Categorical

7.4.18 Other Subjective Pain Reassessment: Post-Analgesia

Fieldname	<i>reassesspsother</i>
Definition	Those patients who have or have not had their pain score reassessed and recorded after analgesia in the ED. This could be any documented attempt at assessing the pain level of the patient, but not using any of the above pain scores. This will be a subjective assessment of the pain.
Layout	NN (Number: 2 Characters)
Codeset (If Applicable)	1 = Not Recorded 2 = Subjective Reassessment 3 = Formal Reassessment With Any Pain Score 4 = Unable to assess 5 = Declined assessment 6 = Not Available
Reported For	Includes: All ED patients presenting with pain Excludes: ED patients presenting without pain
Description	This recognizes an attempt to assess the severity of pain quantified after first analgesia given where it is clear such an assessment has been made but a formal pain score or severity has not been used.
Expressed As	Categorical

7.4.19 Raw Subjective Pain Reassessment: Post-Analgesia

Fieldname	<i>reassesspsotherraw</i>
Definition	Those patients who have or have not had their pain score reassessed and recorded using a subjective means (plain language documentation in notes rather than the use of the validated pain scores), after analgesia in the ED.
Layout	NN (Number: 2 Characters)
Codeset (If Applicable)	N/A
Reported For	Includes: All ED Presentations Excludes:
Description	This will be free text documentation of what has been recorded in the notes. This could be any documented attempt at assessing the pain level of the patient, but not using any of the above pain scores. This will be a subjective assessment of the pain.
Expressed As	String

7.4.20 Adequate Analgesia

Fieldname	<i>adeqanalg</i>
Definition	An assessment as to the adequacy of analgesia during the ED stay.
Layout	NN (Number: 2 Characters)
Codeset (If Applicable)	0 = Not Adequate 1 = Adequate 2 = Not Recorded 3 = Unable to Assess 4 = Declined Assessment 5 = Not Available <i>Note that this will be calculated automatically using the standard data collection form accompanying this data dictionary.</i>
Reported For	Includes: All ED patients presenting with pain Excludes: ED patients presenting without pain
Description	Using the method described by Jao, ⁶⁸ adequate analgesia is: "Reduction in the triage pain score by ≥ 2 points and to a level <4 ". This means moving from one severity category to at least the next lower and a documented severity category of mild during the ED stay.
Expressed As	Categorical

7.5 Time to Antibiotics in Severe Sepsis

The effects of severe sepsis are a combination of the effect of an infecting organism on the body and the body's response both to this effect and the organism itself. It makes sense that as severe sepsis and septic shock can be devastating with a high mortality, it is imperative to address the initial cause (the organism), as well as the body's response. Intuitively the timelier treatment is the better chance of recovery. However there is little consensus on what constitutes 'too late'.

Eligibility Criteria and Sepsis Severity Stratification: As can be seen from the summary of the consensus definitions and the recent studies on treatment in severe sepsis (which are provided below for completeness) defining who has sepsis or severe sepsis can be very complicated and time consuming for a clinical audit. A pragmatic approach to this has therefore been taken, based on the inclusion criteria of several recent large randomised controlled trials of early sepsis management⁶⁹⁻⁷¹.

The following variables will be recorded as part of assessing eligibility for adults and children to be included in the audit.

Inclusion Criteria for Both Adults and Children

Sepsis = Infection + 2 or more SIRS Criteria

Severe Sepsis = Sepsis + end organ dysfunction (see below)

Septic Shock = Sepsis + (either hypotension or elevated lactate)

SIRS criteria

Temperature (highest or lowest recorded during the ED visit as relevant) NN.N (degrees C)

Heart Rate NNN (Highest recorded during the ED visit)

Respiratory Rate NNN (highest recorded during the ED visit)

Absolute serum White Cell Count (highest recorded during the relevant ED visit) NN.N (X10E9/L)

Severe Sepsis Criteria

Systolic Blood Pressure NNN (mmHg) (recorded during the ED visit)

Lactate (highest recorded during the relevant ED visit) NN.N (mmol/L)

For Children

Capillary Return Time (recorded as delayed shall also be used to indicate severe sepsis in children).

Although this is not part of the consensus guideline, pilot audits of sepsis treatment in children have shown that BP and lactate are rarely done for children in some hospitals and to ensure good yield for the audit this criterion has been added.

Discussion on Sepsis Definitions⁷²⁻⁷⁴: These have been developed from the IHI parameters which are also derived from and follow Levy et al and Dellinger et al's (Surviving Sepsis Campaign)

definitions. These definitions are shown below for completeness. For the purposes of the MOH clinical audit, simplified criteria will be used (section [7.4.2](#) and [7.4.3](#)).

1. ADULTS

Systemic Inflammatory Response Syndrome (SIRS) Definition: is the body's response to systemic activation of the innate immune response, regardless of the cause.

Sepsis Definition: Sepsis is an exaggeration of the body's normal response to infection. There must be **clinical evidence of infection and SIRS**.

Characterised by:

- History Suggestive of New Infection (in ED)
 - Pneumonia, Empyema
 - UTI
 - Acute Abdominal Infection
 - Meningitis
 - Skin / Soft Tissue Infection
 - Bone / Joint Infection
 - Wound Infection
 - Blood Stream Catheter Infection
 - Endocarditis
- **Plus** more than one of the following present AND SIRS new (in ED)
- General Variables (can be measured for this study in **BOLD**)
 - **Fever: Temp > 38.3**
 - **Hypothermia: Temp <36**
 - **Tachycardia: HR > 90**
 - **Tachypnoea: RR > 20 OR PaCO₂ <32mmHg**
 - **Acutely altered mental status (GCS <15)**
 - Significant oedema – positive fluid balance > 20ml/kg (won't be able to measure, don't capture weight)
 - **Hyperglycaemia (not diabetic) Glucose >7.7mmol/l in the absence of diabetes**
- Inflammatory variables
 - **WCC > 12,000**
 - **WCC <4,000**
 - **Normal WCC with >10% immature forms, segmented neutrophils**
 - Plasma CRP > 2 sd above normal value
 - Plasma Procalcitonin > 2 sd above the normal value

Severe Sepsis Definition:

- **Characterised by above PLUS evidence of End-Organ Dysfunction or Septic Shock**
- Any of the following organ dysfunction criteria at a site REMOTE from infection and worse than baseline for the patient.
- **Organ Dysfunction Variables**
 - o Arterial Hypoxaemia PaO₂/FiO₂ ratio <300
 - o Creatinine > 176mmol/l or 2.0mg/dL
 - o Urine Output <45ml/hr for > 2 hours or <0.5ml/kg/hr for 2 hours
 - o Bilirubin > 35 umol/l (or 34.2 – Dellinger) or 2.0mg/dL
 - o Platelet Count < 100,000
 - o Coagulopathy (INR > 1.5, aPTT > 60 secs)

Septic Shock Definition: Sepsis PLUS shock not responsive to adequate fluid resuscitation.

- Adequate fluid resuscitation is considered to be 20mL/kg fluid given in up to one hour
- **Shock Variables**
 - o Tissue Perfusion Variable: Lactate > 2 mmol/l
 - o Haemodynamic variables: SBP <90 or MAP < 70 or SBP decrease >40mmhg

2. CHILDREN

For the purposes of looking at Sepsis we separate the Paediatric population into clinically and physiologically meaningful age groups, using a simplified version to that described by Goldstein et al⁷⁵ from the International Consensus Conference of Paediatric Sepsis.

Newborn: 0 days to 7 days

Neonate: 8 days to 30 days

Infant: 1 month (31 days) to 12 months

Toddler: 13 months to 5 years

School Age: 6 years to 12 years

Adolescent / Young Adult: 13 years to < 18 years

Adult: >= 18 years old

Paediatric sepsis has been touched on by Levy et al⁷², however we will be using the guidelines developed specifically for the paediatric population by Goldstein et al⁷⁵. The following definitions and tables on pages 132-134 of this document have all been copied and extracted from the Goldstein paper.

- **Consensus Definition of Infection in Children:** A suspected or proven (by positive culture, tissue stain, or polymerase chain reaction test) infection caused by any pathogen OR a clinical syndrome associated with a high probability of infection.

➤ Consensus Definition of SIRS in Children:

The presence of at least two of the following four criteria, **one of which must be abnormal temperature or leukocyte count:**

- Core temperature of $>38.5^{\circ}\text{C}$ or $<36^{\circ}\text{C}$.
- Tachycardia, defined as a mean heart rate 2 SD above normal for age in the absence of external stimulus, chronic drugs, or painful stimuli; or otherwise unexplained persistent elevation over a 0.5- to 4-hr time period **OR for children <1 yr old: Bradycardia, defined as a mean heart rate <10 th percentile for age in the absence of external vagal stimulus, β -blocker drugs, or congenital heart disease; or otherwise unexplained persistent depression over a 0.5-hr time period.**
- Mean respiratory rate >2 SD above normal for age or mechanical ventilation for an acute process not related to underlying neuromuscular disease or the receipt of general anaesthesia.
- Leukocyte count elevated or depressed for age (not secondary to chemotherapy-induced leucopenia) or $>10\%$ immature neutrophils.

Table 2. Age-specific vital signs and laboratory variables taken from Goldstein et al⁷⁵

Age Group ^a	Heart Rate, Beats/Min ^{b,c}		Respiratory Rate, Breaths/Min ^d	Leukocyte Count, Leukocytes $\times 10^3/\text{mm}^3$ ^{b,c}	Systolic Blood Pressure, mm Hg ^{b,c,e,f}
	Tachycardia	Bradycardia			
0 days to 1 wk	>180	<100	>50	>34	<65
1 wk to 1 mo	>180	<100	>40	>19.5 or <5	<75
1 mo to 1 yr	>180	<90	>34	>17.5 or <5	<100
2–5 yrs	>140	NA	>22	>15.5 or <6	<94
6–12 yrs	>130	NA	>18	>13.5 or <4.5	<105
13 to <18 yrs	>110	NA	>14	>11 or <4.5	<117

Consensus Definition of Sepsis in Children:

SIRS in the presence of or as a result of, suspected, or proven infection.

Consensus Definition of Severe Sepsis in Children:

Sepsis plus one of the following: cardiovascular organ dysfunction OR acute respiratory distress syndrome OR two or more other organ dysfunctions.

Cardiovascular dysfunction: Despite administration of isotonic intravenous fluid bolus ≥ 40 mL/kg in 1 hr

- Decrease in BP (hypotension) <5 th percentile for age or systolic BP <2 SD below normal for age
- OR

- Need for vasoactive drug to maintain BP in normal range (dopamine >5 microg/kg/min or dobutamine, epinephrine, or norepinephrine at any dose)

OR Two of the following

- Unexplained metabolic acidosis: base deficit >-5.0 mEq/L
- Increased arterial lactate >2 times upper limit of normal (upper limit normal 1.6, therefore high lactate is ≥ 3.2)
- Oliguria: urine output ≤ 0.5 mL/kg/hr (not collected)
- Prolonged capillary refill: >5 secs
- Core to peripheral temperature gap $>3^{\circ}\text{C}$ (not collected)

Respiratory

- $\text{PaO}_2/\text{FIO}_2 < 300$ in absence of cyanotic heart disease or pre-existing lung disease

OR

- $\text{PaCO}_2 > 65$ mmHg or 20 mmHg over baseline PaCO_2

OR

- Proven need or >50% FIO₂ to maintain saturation ≥92%

OR

- Need for non-elective invasive or non-invasive mechanical ventilation

Neurologic

- Glasgow Coma Score ≤11

OR

- Acute change in mental status with a decrease in Glasgow Coma Score ≥3 points from abnormal baseline

Hematologic

- Platelet count <80,000/mm³ or a decline of 50% in platelet count from highest value recorded over the past 3 days (for chronic haematology/oncology patients)

OR

- International normalized ratio >2

Renal

- Serum Creatinine ≥2 times upper limit of normal for age or 2-fold increase in baseline Creatinine.
 - 0 – 30 days; ≥ 120 μmol/l
 - 31 days to 24 months: ≥ 100 μmol/l
 - 24 months to 4 years: ≥ 120 μmol/l
 - 4 to 6 years: ≥130 μmol/l
 - 6 to 10 years: ≥140 μmol/l
 - 10 to 15 years: ≥ 160 μmol/l
 - >15 years: ≥176 μmol/l

Hepatic

- Total Bilirubin >4 mg/dL or 70 μmol/l (not applicable for newborn)

OR

- ALT 2 times upper limit of normal for age (0-2 months ≥ 156 u/L and > 2 months ≥72 u/L)

(Acute respiratory distress syndrome must include a PaO₂/FIO₂ ratio ≤200 mm Hg, bilateral infiltrates, acute onset, and no evidence of left heart failure (Refs. 58 and 59). Acute lung injury is defined identically except the PaO₂/FIO₂ ratio must be ≤300 mm Hg)

➤ **Consensus Definition of Septic Shock in Children:**

Sepsis and cardiovascular organ dysfunction as above.

FEAST trial 2011⁷¹: This was a large RCT of the effect of a fluid bolus for children in Africa with severe sepsis. The study used clinical inclusion criteria including delayed capillary return (>3s), lower limb temperature gradient, weak radial pulse volume, or severe tachycardia. Children with gastroenteritis, severe malnutrition and shock from other causes were excluded. The age specific cut-offs used in this study for abnormal pulse and blood pressure were as shown in the table below:

Table 3: FEAST criteria for sepsis⁷¹:

Age	Heart Rate	Systolic Blood Pressure
<12 months	>180	<50mmHG
1 to 5 years	>160	<60mmHG
6 to 12 years	>140	<70mmHG

This study did not stipulate cut-offs for temperature or age related respiratory distress. We have therefore combined elements of the Consensus Statement on Sepsis in Children definitions with those of the FEAST study to arrive at simplified age-specific criteria for sepsis.

Table 4: Pragmatic Criteria based on Goldstein and the FEAST Study for use in the MOH audits for NZ Emergency Departments

Age	Heart Rate	Respiratory Rate	Systolic Blood Pressure
<12 months	>180	>40	<50mmHG
1 to 5 years	>160	>30	<60mmHG
6 to 12 years	>140	>25	<70mmHG

- **Literature on timing of antibiotics for sepsis:**

EGDT therapy – Rivers 2001⁷⁶: This landmark trial compared “Early Goal Directed Therapy” (n=130) for sepsis against standard treatment (n=133). The outcomes of this trial were the forerunner for the surviving sepsis campaign. In-Hospital mortality was the primary efficacy endpoint. ‘Administered treatments’ was one of the secondary endpoints. 92.4% of patients on standard therapy received antibiotics within the first 6 hours of severe sepsis being recognised, compared with only 86.8% in the EGDT group. These were adequate in 94% and 96% of cases respectively. Other than this mention, no other discussion was had regarding time to antibiotics. One important point to make is the unusually high mortality in the “standard care” group.

Bochud 2004⁷⁷: in his evidence based review stated that “**antibiotic therapy should be started within the first hour of recognition of severe sepsis** (after appropriate cultures).” He recommends this on Grade E evidence, but does not present the evidence explicitly in the paper.

When the Surviving Sepsis Campaign (<http://www.survivingsepsis.org>) was launched, it recommended care be delivered in ‘bundles’ stratified to the first 6 hours and the following 24 hours. The aim was to reduce mortality and prevent deterioration from sepsis by earlier recognition and earlier management, driven by a guidelines-based package of care. **It was recommended antibiotics be given within the first hour of arrival to ED** in the 2001 guidelines. The Surviving Sepsis Campaign more recently recommends “that intravenous antibiotic therapy be started **as early as possible and within the first hour of recognition of septic shock** (GRADE 1B) and severe sepsis without septic shock (1D). Appropriate cultures should be obtained before initiating antibiotic therapy, but should not prevent prompt administration of antimicrobial therapy (1D)”. They suggest that **antibiotics be given within 3 hours for ED patients with severe sepsis** and **within 1 hour within recognition of septic shock** or for ED patients expected to go to ICU.

Kumar 2006⁷⁸ – 2731 patients. Retrospective cohort determining: Impact on mortality of delays in initiation of effective antimicrobial therapy, from initial onset of recurrent or persistent hypotension. 2154 (78.9%) of patients got antibiotics after onset of persistent hypotension. A relationship between this delay and in-hospital mortality noted: OR 1.110. Administration of antibiotics in the first hour of documented hypotension was associated with a survival rate of 79.9%. **By the second hour after onset of persistent, recurrent hypotension, the in-hospital mortality rate significantly increased relative to that in the first hour (OR 1.67).** In a multivariate analysis (including APACHE II Score) time to initiation of effective antimicrobial therapy was single strongest predictor of outcome. They surmised that “**duration of hypotension before initiation of effective antimicrobial therapy is the critical determinant of survival in septic shock**”.

Gaieski 2010⁷⁹: Retrospective Analysis 261 patients, single centre study. They studied the association between time to antibiotic admin and survival, in patients with severe sepsis or septic shock undergoing EGDT. No association between antibiotic and survival when assessed at different hourly cut-offs. When time from triage to **appropriate** antibiotics was analysed there

was a significant reduction in mortality at less than 1 hour (OR 0.3, p 0.02) and also in time from qualification for EGDT to **appropriate** antibiotics at less than 1 hour (OR 0.5, p0.03).

PROCESS Trial 2014⁷⁰: PROCESS was a prospective randomised trial looking at protocol based EGDT vs. protocol based standard care vs. usual care in 1341 patients.

Outcomes:

- at least 75% of those patients enrolled in all groups received antibiotics prior to randomisation.
- Mean time to antibiotics was 3 hours after patient arrival in the emergency department
- There was no mortality benefit for protocol driven care over standard care.

ARISE Trial 2014⁶⁹: (Ref): This is the largest RCT of EGDT ever conducted, enrolling 1600 patients. Part of the trial protocol was that antibiotics needed to have been given prior to enrolment. This trial showed the lowest mortality ever recorded for patients with severe sepsis, and no difference between EGDT and standard care.

Recent data from the Surviving Sepsis Campaign database is the best evidence to date that early provision of antibiotics in sepsis is associated with improved mortality.⁸⁰

- Based on these large studies, it is thought that **early sepsis recognition and early antibiotic administration may be the largest drivers to improved sepsis outcomes.**

It should be recognised that the appropriateness of the antibiotics is important too – which is difficult in an ED when the diagnosis may be unclear and ‘best-guess’ antimicrobial therapy is used.

In America time to first antibiotic dose for community acquired pneumonia was used as a ‘pay-for-performance’ quality indicator (antibiotics to be given in less than 4 hours from arrival to the ED). This has led to the unintended consequences of an increase of misdiagnosis and antibiotic overuse⁸¹. A recent review led the American Academy of Emergency medicine to assign a class C recommendation to the measurement of this quality indicator and suggested it be withdrawn as it was not appropriate for the ED, due to conflicting evidence and unintended outcomes.⁸² However in NZ, this outcome will be reported retrospectively and not linked to ‘pay for performance’ incentives so it is unlikely that the same problems that were observed in the USA will be seen in NZ when a time to antibiotic indicator is used.

The College of Emergency Medicine UK Clinical Standards Guidelines⁶⁶ suggests that in the management of severe sepsis and septic shock: “There should be documented evidence that antibiotics were administered:

- In 50% of cases within 1 hour of arrival
- In 90% of cases within 2 hours of arrival
- In 100% cases prior to leaving the ED”

- **Benchmark Time to Antibiotics for Severe Infections: within 3 hours.**

The following are definitions pertinent to the data collection tool for Time to Antibiotics in Severe Sepsis for Emergency Department patients:

7.5.1 Infection

Fieldname	<i>infection</i>
Definition	Is infection the main reason for the index presentation to ED?
Layout	AA (String: Multiple Characters)
Codeset (If Applicable)	1 = Yes 2 = Hospital Transfer 3 = Parenteral ABX prehospital 4= Not ED Visit 5= Not Infection 6 = Not Recorded 7 = Not Available
Reported For	Includes: All ED Presentations with infection as the main reason for presentation who have not already started parenteral (IV, IO, IM) treatment for this infection. If a patient has been given oral antibiotics for a minor infection (e.g. for an URTI) in the days prior to presentation they should still be included. Excludes: Inter-hospital transfers, direct ward admissions, ED visits that are not due to infection and patients treated with parenteral antibiotics for this infection prior to ED arrival.
Description	Inter-hospital transfers and patients already treated for severe infection by a primary care provider have already started their treatment and as a result their times to antibiotics in ED may be delayed. Sometimes a patient is given a diagnosis of infection by coders after a prolonged hospital stay during which time an infection developed, when infection was not the reason for the initial presentation to ED. In this situation the patient is not eligible for the audit of time to / appropriateness of antibiotics in ED.
Expressed As	Categorical

7.5.2 Systemic Inflammatory Response (SIRS) Criteria

7.5.2.1 Temperature

Fieldname	<i>temped</i>
Definition	The highest temperature recorded (in degrees Celsius) during the index ED visit. If the patient is hypothermic then this should be the lowest temperature recorded during the index ED visit
Layout	NN.N
Reported For	Includes: All ED Infection Presentations as defined above
Description	As noted in the explanation of SIRS above, patients with sepsis may present with extremes of temperature. The definition of hypothermia is <36C for both adults and children. The definition of high temperature is >38.3 for adults and >38.5 for children
Expressed As	Numeric (degrees Celsius to one decimal point)

7.5.2.2 Heart Rate

Fieldname	<i>hrhighED</i>
Definition	The highest heart rate recorded during the index ED visit.
Layout	NNN
Reported For	Includes: All ED Infection Presentations as defined in 7.5
Description	Adults = HR > 90. For children the age specific HR for SIRS as per the consensus guidelines should be used (section 7.5)
Expressed As	Numeric (beats per minute)

7.5.2.3 Respiratory Rate

Fieldname	<i>rrhighED</i>
Definition	The highest respiratory rate recorded during the index ED visit.
Layout	NNN
Reported For	Includes: All ED Infection presentations as defined in 7.5
Description	Adults = RR > 20. For children the age specific RR for SIRS as per the consensus guidelines should be used (section 7.5)
Expressed As	Numeric (beats per minute)

7.5.2.4 White Blood Cell Count

Fieldname	<i>wcc</i>
Definition	The first absolute white blood cell count taken during the index ED visit.
Layout	NNN.N
Reported For	Includes: All ED Infection presentations as defined in 7.5
Description	Adults = > 12 or <4. For children the age specific WCC for SIRS as per the consensus guidelines should be used (section 7.5)
Expressed As	Numeric (number of white blood cells x 10E9/L)

7.5.3 Severe Sepsis (End Organ Dysfunction) Criteria

7.5.3.1 Lowest Systolic Blood Pressure

Fieldname	<i>lowsbped</i>
Definition	The lowest systolic blood pressure recorded during the index ED visit.
Layout	NNN
Reported For	Includes: All ED Infection presentations as defined in 7.5
Description	Adults = <90. For children the age specific BP to indicate hypotension indicating severe infection as per the consensus guidelines should be used (section 7.5)
Expressed As	Numeric (mmHg)

7.5.3.2 Lactate

Fieldname	<i>lactate</i>
Definition	The highest lactate level recorded during the index ED visit.
Layout	NN.N
Reported For	Includes: All ED Infection presentations as defined in 7.5
Description	For both adults and children a lactate of >2mmol/L will be taken to indicate severe infection
Expressed As	Numeric (mmol/L)

7.5.3.3 Capillary Return

Fieldname	<i>capreturn</i>
Definition	The time taken for return of colour to the skin after a period of digital compression of the skin. The skin appearance and temperature may also be described
Layout	AA (String: Multiple Characters)
Codeset (If Applicable)	0 = Normal <2s 1 = Delayed / Mottled or Skin Cold 2 = Not Recorded 3 = Not Available
Reported For	Includes: All ED Infection presentations as defined in 7.5 with age <18
Description	For children who have not had a BP or lactate done a delay in capillary return >2s or a skin appearance that is mottled or a skin temperature that is cold may be used to indicate a low perfusion state consistent with severe sepsis.
Expressed As	Categorical

7.5.3.4 New End Organ Dysfunction

Fieldname	<i>endorg</i>
Definition	Evidence of new end organ dysfunction based on laboratory or other values higher or lower (as applicable) than the accepted thresholds (see definitions above in sections 7.5) and not previously present (worse than baseline for the patient).
Layout	AA (String: Multiple Characters)
Codeset (If Applicable)	0 = No end organ dysfunction 1 = At least one new end organ dysfunction 2 = Not Recorded 3 = Not Available
Reported For Description	Includes: All ED Infection presentations as defined in 7.5 This refers to any evidence of end organ dysfunction with respect to the lungs, kidneys, liver, central nervous system (confusion/delirium), platelets (thrombocytopenia) and coagulation. If no relevant tests are done then this should be 'Not Recorded'. If one or more but not all relevant tests are done then 'No end organ dysfunction' can be documented for the sake of the NZ ED audits. For Paediatric patients the administration of a fluid bolus of greater than or equal to 10mls/kg in a 30 minute period to patients with delayed capillary return is recognition in this population of the patient likely to have circulatory failure (end-organ dysfunction) as a result of sepsis. (ref personal communication Dr M. Shepherd, Clinical Director, Starship Children's Hospital Emergency Department, 2014)
Expressed As	Categorical

7.5.4 ED First Antibiotic Given

Fieldname	<i>firstabx</i>
Definition	The name of the first dose of Antibiotics administered to patient
Layout	AA (String – Multiple Characters) Space for three columns
Codeset (If Applicable)	1 = Amoxycillin 2 = Amoxycillin and Clavulinic Acid (Augmentin) 3 = Azithromycin 4 = Aztreonem 5 = Cefepime 6 = Cefoxitin 7 = Ceftriaxone 8 = Cefuroxime 9 = Cephazolin 10 = Ciprofloxacin 11 = Clindamycin 12 = Co-Trimoxazole 13 = Doxycycline 14 = Erythromycin 15 = Flucloxacillin 16 = Gentamicin 17 = Metronidazole 18 = Norfloxacin 19 = Other Cephalosporin 20 = Penicillin (Benzylpenicillin) 21 = Roxithromycin 22 = Tazocin 23 = Vancomycin 24 = Other Antibiotic - See Comments 25 = None Given 26 = Not Recorded 27 = Not Available
Reported For	Includes: All ED Sepsis Presentations Excludes:
Description	Type name of antibiotics given in ED. Usually documented in patients notes or electronic signature from Medications Room.
Expressed As	Categorical

7.5.5 ED First Antibiotic Route

Fieldname	<i>firstabxroute</i>
Definition	The route of administration of the first dose of Antibiotics in ED
Layout	AA (String – Multiple Characters)
Codeset (If Applicable)	0 = Not Recorded 1 = Oral 2 = Intravenous 3 = Intramuscular 4 = Intraosseous 5 = Not available
Reported For	Includes: All ED Sepsis Presentations Excludes:
Description	Route of antibiotics given in ED. Usually documented in patients notes or electronic signature from electronic prescribing. If record space for route blank – counted as not recorded. Not available means notes for this visit are not available.
Expressed As	Categorical

7.5.6 ED First Antibiotic Time

Fieldname	<i>firstabxtime</i>
Definition	Time First dose of Antibiotics administered to patient
Layout	DD/MM/CCYY HH:MM (Date and Time: 15 characters separated by a space between year and hour values)
Codeset (If Applicable)	n/a
Reported For	Includes: All ED Sepsis Presentations Excludes:
Description	Usually documented in patients notes. Time of administration recorded by prescribed medication. All patients with severe sepsis should receive antibiotics in the ED. However as we see below, there is a difference between just 'any' antibiotics and the 'appropriate' antibiotic. Good practice dictates that "best Guess Therapy" be used for suspected infection. The inappropriate choice of antibiotic may actually harm rather than help the patient.
Expressed As	Numeric (Time)

7.5.7 Time to ED First Antibiotic

Fieldname	<i>timetofirstabx</i>
Definition	Time from presentation to the emergency department to the first antibiotic given
Layout	MMMM (Minutes)
Reporting	Mandatory
Frequency	Regularly
Reported For	Includes: All ED Presentations Excludes:
Quality Measure	(7.5.6) ED First Antibiotic Time - (2.3) ED Presentation Time
Expressed As	Numeric (Time)
Numerator	Number of eligible patients meeting target time to antibiotics
Denominator	Total number of eligible patients
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long times</i> Proportion meeting target time for antibiotics %(95%CI)

7.5.8 Predominant Culture Growth

Fieldname	<i>predomgrowth</i>
Definition	The most prevalent infecting agent grown in culture or detected using dna, rna or other antigen test at or around the index ED visit
Layout	AA (String: Multiple Characters)
Codeset (If Applicable)	0 = No Growth 1 = E-Coli 2 = Staphylococcus Aureus 3 = Streptococcus Pneumoniae 4 = Staphylococcus Epidermidis 5 = Staphylococcus Saprophyticus 6 = Other Staph Species 7 = Streptococcus Pyogenes 8 = Streptococcus Milleri 9 = Streptococcus Viridans 10 = Other Streptococcus Species 11 = Bacteroides spp 12 = Campylobacter Jujuni 13 = Chlamydia Trachomatis 14 = Clostridium Difficile 15 = Enterobacter species 16 = Enterococcus Faecalis 17 = Giardia 18 = Haemophilus Influenzae 19 = Klebsiella Pneumoniae 20 = Legionella Pneumophila 21 = Listeria Monocytogenes 22 = Moraxella Catarrhalis 23 = Neisseria Gonorrhoeae 24 = Neisseria Meningitidis 25 = Proteus Mirabilis 26 = Pseudomonas 27 = Salmonella 28 = Shigella 29 = Yersinia Enterocolitica 30 = Yersinia Pseudotuberculosis 31 = Viral Infection 32 = Fungal/Yeast Infection 33 = Other 34 = Multiple 35 = No culture or other test done 36 = Not Recorded 37 = Not Available

Reported For	Includes: All ED Sepsis Presentations
Description	The organism most likely causing the index infection based on the results of contemporaneous laboratory tests and the clinical picture from the notes. If there are multiple organism cultured or otherwise identified then 'Multiple' should be selected and a comment made regarding which organisms were identified in the 'comments' field at the end of the data collection sheet.
Expressed As	Categorical

7.5.9 Growth Sensitive to ED Antibiotic

Fieldname	<i>growthsensedabx</i>
Definition	The organism(s) identified as the predominant growth (see above, section 5.5.X) was sensitive to an ED antibiotic (note this relates to any antibiotic given during the ED stay, not necessarily the first ED antibiotic)
Layout	AA (String: Multiple Characters)
Codeset (If Applicable)	0 = No 1 = Yes 2 = Unknown 3 = Not Recorded 4 = Not Available
Reported For	Includes: All ED Sepsis Presentations.
Description Expressed As	This should be coded as Unknown if no culture was done Categorical

7.5.10 Primary Site of Infection

Fieldname	<i>infsite</i>
Definition	The site of infection causing symptoms
Layout	AA (String: Multiple Characters)
Codeset (If Applicable)	0 = No site of infection 1 = Blood 2 = Urinary Tract 3 = Respiratory Tract 4 = Abdominal Cavity 5 = Central Nervous System 6 = Bone 7 = Cardiac 8 = Genital 9 = Implant or Catheter related infection 10 = Sinus cavity 11 = Skin 12 = Neutropenic Sepsis 13 = Multiple Sites of Infection 14 = Unknown 15 = Not Recorded 16 = Not Available
Reported For	Includes: All ED Sepsis Presentations Excludes:
Description	The site of infection as proposed by the ED clinician during the patients' ED stay. Sometimes this diagnosis is just postulated in the ED, as time may be needed before a source is found. We recommend using site of infection as documented in the clinical notes from ED or if not documented there, the admission note from the admitting team.
Expressed As	Categorical

7.5.11 ED Antibiotic Appropriate

Fieldname	<i>edabxapprop</i>
Definition	The organism(s) identified as the predominant growth (see above, section 5.5.X) was sensitive to any given ED antibiotic.
Layout	AA (String: Multiple Characters)
Codeset (If Applicable)	0 = No 1 = Yes 2 = Unknown 3 = Not Recorded 4 = Not Available
Reported For	Includes: All ED Sepsis Presentations.
Description	If an organism was identified by means other than culture or a culture was done but no sensitivity testing was reported the ED antibiotic may still be appropriate if the choice of antibiotic was appropriate for the site of infection according to the local guideline and known local antibiotic sensitivities (note this relates to any antibiotic given during the ED stay, not necessarily the first ED antibiotic). If there is no local guideline then this should be recorded as unknown.
Expressed As	Categorical

7.5.12 First Appropriate Antibiotic Time

Fieldname	<i>firstappabxtime</i>
Definition	Time of the first dose of appropriate antibiotics administered to patient. This can be in ED or in an inpatient setting.
Layout	DD/MM/CCYY HH:MM (Date and Time: 15 characters separated by a space between year and hour values)
Codeset (If Applicable)	n/a
Reported For	Includes: All ED Sepsis Presentations Excludes: Antibiotics that are not appropriate for the predominant growth or the site of infection according to local guidelines
Description	Usually documented in patients notes. Time of administration recorded by prescribed medication. All patients with severe sepsis should receive antibiotics in the ED. However as we see below, there is a difference between just 'any' antibiotics and the 'appropriate' antibiotic. Good practice dictates that "best Guess Therapy" be used for suspected infection. The inappropriate choice of antibiotic may actually harm rather than help the patient.
Expressed As	Numeric (Time)

7.5.13 Time to First Appropriate Antibiotic

Fieldname	<i>timetofirstappabx</i>
Definition	Time from presentation to the emergency department to the first appropriate antibiotic given
Layout	MMMM (Minutes)
Reporting	Mandatory
Frequency	Regularly
Reported For	Includes: All ED Presentations Excludes:
Quality Measure	<i>(7.5.12) FirstAppABXTime - (2.3) ED Presentation Time</i>
Expressed As	Numeric (Time)
Numerator	Number of eligible patients meeting target time to antibiotics
Denominator	Total number of eligible patients
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long times</i> Proportion meeting target time for antibiotics %(95%CI)

7.6 Procedural and Other Audits

Mandatory

Regularly

Definitions and implementation to be established locally by individual departments.

For example, audits into the numbers, appropriateness, success and complications of:

- Procedural sedation
- Endotracheal intubation
- Central lines
- Audit of appropriateness of imaging
- Audit of appropriateness of pathology testing.

7.7 Other Clinical Audits

Mandatory

Regularly

Definitions and implementation to be established locally by individual departments.

“The expectation is that a clinical audit will be performed at least every 12 months, rotating randomly or according to a local focus – possibly identified in a mortality and morbidity review or sentinel event review process. Some examples are listed below, (including countries where they are recommended), however, the choice of topic to audit should be dictated by local need”²:

- Paediatric fever (0 to 28 days) with septic workup percent (Canada 2010)
- Paediatric fever (0 to 28 days) who get antibiotics percent (Canada 2010)
- Paediatric croup (3 months to 3 years) who get steroids percent (Canada 2010)
- Time to treatment for asthma
- Asthma patients (moderate and severe) who are discharged from the ED who get a discharge prescription for steroids percent (Canada 2010)
- Time to antibiotics in meningitis percent (Canada 2010)
- Cellulitis that ends in admission percent (NHS England 2012)
- DVT that ends in admission percent (NHS England 2012)
- Audit of high risk or high volume conditions (ACEM 2012)
- Audit of clinical guidelines compliance (ACEM 2012) \
- Audit of medication errors (ACEM 2012)
- Patient falls
- Missed fractures on X-rays percent
- Screening for non-accidental injury and neglect in children
- Screening for domestic violence and partner abuse
- Public health/preventative audits, such as alcohol or substance misuse
- Appropriate discharge of vulnerable people from the ED (to include discharge of older people at night).

8.0 Documentation and Communication Audits

Mandatory

Regularly

The definitions for the quality of communication with GP's audit are provided below as an example. For other audits under this category definitions and implementation are to be established locally by individual departments.

These should be done regularly and might consist of all or an alternating selection of the following:

8.1 Quality of Notes Audit

Documentation standards. Such audits will examine documentation standards under locally selected criteria but would normally include attention to recording of doctors' and nurses' names, times of clinical encounters, good clinical information, appropriate details of discharge condition of the patient and discharge instructions.

8.2 Quality of Discharge Instructions Audit

This measure is considered of particular importance. It might be achieved by specific attention to this issue in a notes audit or a focus on the proportion of patients who get written discharge advice or those with specific conditions (for example, sutures or a minor head injury), who get appropriate written discharge instructions.

8.3 Quality of Internal Communication within the Hospital

Related to handover of care between the ED and other services

8.4 Quality of Communication with GP for Discharged Patients Audit

Handover of care to the patient's GP, (and provision of appropriate follow up arrangements), is important. This might be a focused part of a general notes audit, or it might be a count and quality appraisal of written or electronic notes to the patients' GPs.

Aim:

The underlying aim is to assess the adequacy and quality of the electronic discharge summary provided to patients when they are discharged by an ED clinician

In an emergency department, discharge communication represents a key step in medical care – specifically the handover of care from the hospital to the community medical teams.

They also serve a purpose to educate the patient about their condition and provide the patient with written advice on further management.

According to the ACEM Audit of Medical Practice Implementation plan “Handover of care to the patients GP (and provision of follow-up arrangements) is important.”

What is a Quality Discharge Summary?

One would imagine a quality discharge summary is one that contains all the necessary information relevant to a patient's medical problem, ED diagnosis, ED management and further care included. Therefore a quality discharge summary should be easy to write, have concise, pertinent content and be relevant not just to hospital clinicians and GP's, but also the patient as well.

The ACEM policy document on “Components of an Emergency Medicine Consultation”⁸³ states that for patients discharged from ED there is a process of:

- **Discharge Instructions:**
 - **Measures to be taken to assist in treatment**
 - **Timing and Service involved in the scheduled review of their condition**
 - **Instructions as to when to seek unscheduled review**
 - **Written discharge instructions where relevant**
 - **Documentation of above in notes**
- **Discharge Communication of Diagnosis and Management plan to relevant care provider (i.e. discharge summary).**

Content:

Taylor and Cameron⁸⁴ state “all patients discharged home from the emergency department should be given instructions for the ongoing management of their illness”. Their essential elements of a discharge summary (based on author consideration, patient and medico-legal requirements and a paucity of literature) are:

- General Features:
 - Patient Name
 - Physician Name
- Illness Related Features:
 - Diagnosis
 - Expected course of illness
 - Potential complications of illness
- Patient Instructions:
 - General instructions for the management of the illness
 - Medication Prescribed
 - Name
 - Dose
 - Frequency
 - Purpose
 - Complications or side effects
 - Any alteration in usual drug regimen
 - Advice on follow-up
 - Service (with whom)
 - Appropriate time
 - Advised review in ED in the event of serious complications
 - Medico-legal
 - Date and time on summary

Jansen et al⁸⁵ defined an Emergency Department “**gold standard**” discharge letter as containing the following data elements:

- Accurate primary diagnosis
- Relevant secondary diagnosis
- Concise summary of management
 - Details of minor procedures if relevant to follow-up
- Hospital follow-up arrangements (if any)
- Any issues (including pending tests, social) *requiring follow-up or action by GP*

The Joint Commission (US)⁸⁶ requires that (generic) discharge summaries include the following elements:

- The reason for hospitalisation
- Significant findings
- Procedures performed
- Treatment provided
- Patients condition at discharge
- Information provided to the patient (and family)

Relevance of Content

So what information do GP’s actually want to see in a discharge summary from ED? In a 1996 survey of GP’s, Wass et al⁸⁷ found the following information was most important to GP’s on the discharge summary for ED patients:

- Patients Presenting Complaint
- Investigations done
- Results of Investigations
- Diagnosis made in ED
- Treatment given in ED
- Follow-up Arrangements
- Speciality under which the patient was admitted
- Issue of a sick note

A subsequent literature review by Kripalani et al⁸⁸ looked at observational studies investigating communication and information transfer at discharge from hospital. They surmised that Primary Care Physicians generally rate the following as most important discharge documentation to be able to provide adequate follow-up care:

- Main Diagnosis
- Pertinent Physical Findings
- Results of Procedures
- Results of Investigations
- Discharge Medications and reasons for change in medications if any
- Details of follow-up arrangements
- Information given to patients and family
- Test results pending at discharge (and who is to chase these): missing from 65% of discharge summaries in review.
- Specific follow-up needs

Definition of a “Quality” Discharge Summary

Although there is some agreement on what information a discharge summary ought to contain, there are no real definitions or agreements in the literature as to what constitutes a *quality* discharge summary. Jansen et al⁸⁵ attempted to define the overall quality of correspondence:

- **Satisfactory:** All necessary information relevant to patient’s further care included
- **Lacking:** Inaccurate Diagnosis, missing detail regarding management of follow-up
- **Unacceptable:** Wrong diagnosis, dangerously misleading content.

Nearly 50% of the 300 discharge summaries they reviewed had a wrong or inaccurate diagnosis.

A recent systematic review by Jones et al (manuscript submitted for publication April 2014) was undertaken to inform the use of discharge summaries as a marker of the quality of communication between the ED and primary care. Findings; key components to include in the ED discharge summary to primary care are: the discharge diagnosis, treatment received, results of investigations and follow-up plan. The conclusion was adequacy of these components should be considered when assessing the quality of discharge summaries.

The above information has been used to develop the following components of the discharge summary to be measured and definitions as to the adequacy of the information therein. Data will include all patients who presented to ED, who were then subsequently discharged from the ED. This should exclude inpatient team patients who were discharged from the ED. This data is then recorded on the “Audit Discharge Communication to GP” data collection tool.

8.4.1 Discharge Letter Done

Fieldname	<i>dcletter</i>
Definition	Whether or not the patient has a recorded discharge letter in the clinical notes.
Layout	N (Number: 1 Characters)
Codeset (If Applicable)	0 = No 1 = Yes 3 = No - DNW 4 = Self Discharge (after seen by ED Clinician) 5 = Excluded – Not ED Patient 6 = Not available
Reported For	Includes: All Events discharged from ED (includes ED Short Stay patients and patients discharged from the ED under the care of an inpatient specialty)
Description	Excludes: All patients admitted to an inpatient ward Should be accessible from electronic records and also paper patient records.
Expressed As	Categorical

8.4.2 Discharge Letter Date

Fieldname	<i>dcdte</i>
Definition	The date (and time, if recorded) the discharge letter was written and finalized. If there is no date / time on the letter then this field will be blank.
Layout	DD/MM/CCYY HH:MM (Date and Time: 15 characters separated by a space between year and hour values)
Codeset (If Applicable)	n/a
Reported For	Includes: All Events discharged from ED Excludes: All patients admitted to inpatient ward
Description	Usually documented on the discharge letter when written electronically – this does not change of the letter has been modified, but the date and time of modification is recorded. This will be simple to capture of discharge letter in electronic format, however may be more difficult if written letters have been used. This is not the date and time the patient was discharged, but the date and time the letter was written.
Expressed As	Numeric (Time)

8.4.3 Discharge Diagnosis

Fieldname	<i>dcinfo</i>
Definition	Whether or not the patient has Diagnosis Information recorded on the discharge letter.
Layout	N (Number: 1 Characters)
Codeset (If Applicable)	1 = Adequate 2 = Inadequate 3 = Unacceptable 4 = Not Available
Reported For	Includes: All Events discharged from ED (includes ED Short Stay patients and patients discharged from the ED under the care of an inpatient specialty)
Description	Excludes: All patients admitted to an inpatient ward Should be accessible from electronic records and also paper patient records. Adequacy based on: Adequate = Correct Primary Diagnosis and some detail on relevant secondary diagnoses. If no diagnosis can be reached within the time in ED this may be acceptable if this is appropriately alluded to in clinical notes and discharge summary. Inadequate = Inaccurate Primary Diagnosis (especially if a “symptom” as opposed to diagnosis or differs to clinical notes) and / or inaccurate, irrelevant or missing detail on secondary diagnosis information Unacceptable = Wrong primary diagnosis or no primary diagnosis recorded on summary, or very obvious that the wrong details (belonging to another patient) have been recorded. Not Available = notes for event not available. This is applicable for all patient discharges. For self discharges (DNW) if the patient has not been seen by a physician, no discharge summary may be adequate (appropriate)
Expressed As	Categorical

8.4.4 Discharge Treatment Information

Fieldname	<i>rxinfo</i>
Definition	Whether or not the patient has ED treatment information recorded on the discharge letter.
Layout	N (Number: 1 Characters)
Codeset (If Applicable)	1 = Adequate 2 = Inadequate 3 = Unacceptable 4 = Not Available
Reported For	Includes: All Events discharged from ED (includes ED Short Stay patients and patients discharged from the ED under the care of an inpatient specialty)
Description	Excludes: All patients admitted to an inpatient ward Should be accessible from electronic records and also paper patient records. Treatment involves non-surgical management of illness, including medications given to ameliorate or treat disease. Adequacy based on: Adequate = Correct and concise documentation of treatments delivered in ED relevant to primary diagnosis, or documentation of no need for treatment, or no documentation when no treatment given. Inadequate = Incomplete treatment information from ED (only some aspects of treatment documented – but not likely to be harmful) Unacceptable = Wrong treatment information or missing treatment information when treatment given (likely to be harmful). Not Available = notes for event not available.
Expressed As	Categorical

8.4.5 Treatment Complications Information

Fieldname	<i>rxcompinfo</i>
Definition	Whether the patient has ED treatment complications information recorded on the discharge letter.
Layout	N (Number: 1 Characters)
Codeset (If Applicable)	1 = Adequate 2 = Inadequate 3 = Unacceptable 4 = Not Available
Reported For	Includes: All Events discharged from ED (includes ED Short Stay patients and patients discharged from the ED under the care of an inpatient specialty)
Description	Excludes: All patients admitted to an inpatient ward Should be accessible from electronic records and also paper patient records. Treatment involves non-surgical management of illness, including medications given to ameliorate or treat disease. Complications of these include allergic reactions, wrong medications or doses given and side-effects of treatment (for example GI Bleed or renal failure). Adequacy based on: Adequate = Correct and concise documentation of most treatment complications in ED, or documentation of no complications of treatment, or no complication occurred, therefore not necessary to document this in discharge summary, or no treatment given. Inadequate = Incomplete treatment complication information from ED (not likely to be harmful if treatment repeated) Unacceptable = Wrong treatment complication information or not documented when a complication happened (likely to cause harm if treatment were subsequently repeated). Not Available = notes for event not available.
Expressed As	Categorical

8.4.6 Procedures Information

Fieldname	<i>procinfo</i>
Definition	Whether or not the patient has ED procedures information recorded on the discharge letter.
Layout	N (Number: 1 Characters)
Codeset (If Applicable)	1 = Adequate 2 = Inadequate 3 = Unacceptable 4 = Not Available
Reported For	Includes: All Events discharged from ED (includes ED Short Stay patients and patients discharged from the ED under the care of an inpatient specialty)
Description	Excludes: All patients admitted to an inpatient ward Should be accessible from electronic records and also paper patient records. Procedures involve any invasive procedure carried out on the patient (example of this would be a fracture manipulation or lumbar puncture). Adequacy based on: Adequate = Correct and concise documentation of all procedures carried out in ED (does not need to include venepuncture or peripheral intravenous cannulation), or not recorded when no procedure done. Inadequate = Inaccurate or incomplete procedure information from ED (e.g. some but not all relevant procedures documented) Unacceptable = Wrong procedure information, no procedure documented when procedure occurred. Not Available = notes for event not available.
Expressed As	Categorical

8.4.7 Procedure Complications Information

Fieldname	<i>proccompinfo</i>
Definition	Whether or not the patient has ED procedure complications information recorded on the discharge letter.
Layout	N (Number: 1 Characters)
Codeset (If Applicable)	1 = Adequate 2 = Inadequate 3 = Unacceptable 4 = Not Available
Reported For	Includes: All Events discharged from ED (includes ED Short Stay patients and patients discharged from the ED under the care of an inpatient specialty)
Description	Excludes: All patients admitted to an inpatient ward Should be accessible from electronic records and also paper patient records. Procedures involve any invasive procedure carried out on the patient. Complications of these include IV or venepuncture site infection / haematoma, post-op wound infection, unscheduled return to OR, failure of procedure etc. Adequacy based on: Adequate = Correct and concise documentation of most procedure complications in ED, or documentation of no complications of procedures, or no procedures carried out, or not recorded if no complication of the procedure. Inadequate = Inaccurate or incomplete procedure complication information from ED (not likely to cause harm if procedure subsequently repeated) Unacceptable = Wrong procedure complication information or no procedure complication information documented if a complication happened (likely to cause harm if subsequently repeated). Not Available = notes for event not available.
Expressed As	Categorical

8.4.8 Investigation Results Information

Fieldname	<i>ixinfo</i>
Definition	Whether or not the patient has ED investigation results information recorded on the discharge letter.
Layout	N (Number: 1 Characters)
Codeset (If Applicable)	1 = Adequate 2 = Inadequate 3 = Unacceptable 4 = Not Available
Reported For	Includes: All Events discharged from ED (includes ED Short Stay patients and patients discharged from the ED under the care of an inpatient specialty) Excludes: All patients admitted to an inpatient ward
Description	Should be accessible from electronic records and also paper patient records. The discharge summary should include pertinent results of investigations related to the ED presentation (e.g. CT Head for minor head injury) or relevant abnormal results. Pending test results will be covered in next data point (10.8.8). It does not necessarily mean every result. Adequacy based on: Adequate = Correct and concise documentation pertinent results of investigations related to the ED presentation (e.g. CT Head for minor head injury) or relevant abnormal results to flag to GP. Or documentation of no investigations carried out as not clinically needed. This will include discharge summaries that have been amended to include missed fractures, or initially wrongly reported scans (for example) as this is a clinician issue not a discharge summary issue. Inadequate = Inaccurate or incomplete investigation information from ED (not likely to cause harm if investigation subsequently repeated or abnormal result not flagged) Unacceptable = Wrong investigation information (i.e. results from another patient) or no investigation information documented if was abnormal (likely to cause harm if subsequently missed) – an example could be a CT head provisionally reported as normal, then reported as abnormal formally next day with no appropriate follow-up of this. Not Available = notes for event not available.
Expressed As	Categorical

8.4.9 GP-Specific Ongoing Care Information

Fieldname	<i>gpinfo</i>
Definition	Whether or not the patient has a need for ongoing care (whilst in the community) and information relaying such to the GP recorded on the discharge letter.
Layout	N (Number: 1 Characters)
Codeset (If Applicable)	1 = Adequate 2 = Inadequate 3 = Unacceptable 4 = Not Available
Reported For	Includes: All Events discharged from ED (includes ED Short Stay patients and patients discharged from the ED under the care of an inpatient specialty)
Description	Excludes: All patients admitted to an inpatient ward Should be accessible from electronic records and also paper patient records. Ongoing care advice includes: • Details of hospital follow-up arrangements (service and timing) • Test results pending at discharge (and who is to chase these) • Specific follow-up needs for GP to arrange (i.e. organizing further investigations) Adequate = all of the points above recorded if applicable, or documentation that the patient does not need to be followed up, or no need for ongoing care. Inadequate = inaccurate or incomplete (missing points above if they are applicable) ongoing care information, unlikely to cause harm if not documented. Unacceptable = wrong or misleading information given to the GP regarding ongoing care or none documented when ongoing care required (likely to cause harm if not documented). Not Available = notes for event not available. If the patient has self discharged, adequacy will be based on discharge letter as per criteria above; as it is important the GP is aware of this, however if they have not been seen by a physician this may be adequate.
Expressed As	Categorical

8.4.10 Patient-Specific Ongoing Care Information

Fieldname	<i>dcpatinfo</i>
Definition	Whether or not the patient has discharge information recorded on the discharge letter.
Layout	N (Number: 1 Characters)
Codeset (If Applicable)	1 = Adequate 2 = Adequate - self D/C attempt to Contact 3 = Inadequate 4 = Inadequate – self D/C no attempt to Contact 5 = Unacceptable 6 = Not Available
Reported For	Includes: All Events discharged from ED (includes ED Short Stay patients and patients discharged from the ED under the care of an inpatient specialty)
Description	Excludes: All patients admitted to an inpatient ward Should be accessible from electronic records and also paper patient records. Discharge information should include: • Advice on diagnosis • Detail about expectations for course of recovery • Potential Complications • Guidelines for management of the illness

Adequate = all of above points covered on discharge summary. The information can be documented as either an instruction note in the discharge summary, as a patient information handout or as a note in the clinical information (verbal information). Either of these is adequate as long as they include all of the above points. All patients should have some information.

Adequate, self discharge with attempt to contact = Patient has self-discharged without notifying healthcare professionals, and an attempt has been made to contact the patient and provide specific advice information.

Inadequate = inaccurate or incomplete (missing points above if they are applicable) patient-specific information.

Inadequate, self discharge with no attempt to contact = Patient has self-discharged without notifying healthcare professionals and no attempt has been made to contact the patient and provide specific advice information

Unacceptable = Patient-specific information wrong, not relevant to case or none documented.

Not Available = notes for event not available.

Expressed As Categorical

8.4.11 Patient-Specific Information – Clinical Notes

Fieldname	<i>dcpatinfonotes</i>
Definition	Whether or not the patient has discharge information recorded in the clinical notes prior to discharge.
Layout	N (Number: 1 Characters)
Codeset (If Applicable)	1 = Adequate 2 = Adequate - self D/C attempt to Contact 3 = Inadequate 4 = Inadequate – self D/C no attempt to Contact 5 = Unacceptable 6 = Not Available
Reported For	Includes: All Events discharged from ED (includes ED Short Stay patients and patients discharged from the ED under the care of an inpatient specialty)
Description	Excludes: All patients admitted to an inpatient ward Should be accessible from electronic records and also paper patient records. Discharge information recorded in the notes is important from a medico-legal point of view and is also covered by an ACEM policy document for ED discharges⁸³. This should include: • Advice on diagnosis • Detail about expectations for course of recovery • Potential Complications • Guidelines for management of the illness Adequate = all of above points covered in clinical notes. The information is documented as either verbal instructions (but must be documented what the patient was told), an instruction note or as an information handout. Either of these is adequate as long as they include all of the above points. All patients should have some information. Adequate, self discharge with attempt to contact = Patient has self-discharged without notifying healthcare professionals, and an attempt has been made to contact the patient and provide specific advice in information over the phone, then this is documented in the clinical notes Inadequate = inaccurate or incomplete (missing points above if they are applicable) patient-specific information. Inadequate, self discharge with no attempt to contact = Patient has self-discharged without notifying healthcare professionals and no attempt has been made to contact the patient and provide specific advice in information. Unacceptable = Patient-specific information wrong, not relevant to case or none documented. Not Available = notes for event not available.
Expressed As	Categorical

8.4.12 Patient Information Adequacy - Overall

Fieldname	<i>overalldcpatinfo</i>
Definition	The best of either patient-specific discharge information present in the discharge summary or the clinical notes.
Layout	N (Number: 1 Characters)
Codeset (If Applicable)	1 = Adequate 2 = Adequate - self D/C attempt to Contact 3 = Inadequate 4 = Inadequate – self D/C no attempt to Contact 5 = Unacceptable 6 = Not Available
Reported For	Includes: All Events discharged from ED (includes ED Short Stay patients and patients discharged from the ED under the care of an inpatient specialty) Excludes: All patients admitted to an inpatient ward
Description	As long as the patient has documented discharge information in either the discharge summary or the clinical notes. The best adequacy of either of these (8.4.10, 8.4.11) is recorded in this column and used to calculate overall adequacy for this section.
Expressed As	Categorical

8.4.13 Discharge Medication Information

Fieldname	<i>dcmeginfo</i>
Definition	Whether or not the patient has information recorded on the discharge letter in relation to their discharge medications.
Layout	N (Number: 1 Characters)
Codeset (If Applicable)	1 = Adequate 2 = Adequate - self D/C attempt to Contact 3 = Inadequate 4 = Inadequate – self D/C no attempt to Contact 5 = Unacceptable 6 = Not Available
Reported For	Includes: All Events discharged from ED (includes ED Short Stay patients and patients discharged from the ED under the care of an inpatient specialty) Excludes: All patients admitted to an inpatient ward
Description	This information details information on the medications prescribed on discharge it should include: • Name • Dose • Frequency • Purpose – in relation to current issue (i.e. analgesia for #) • Potential complications or side effects • Any alteration in usual drug regimen • Relevant allergies When no medication documented on d/c summary this shall be: Adequate if no medication prescribed when not indicated (minor injury and illness, mild pain only, or patient declines). Otherwise this could be regarded as inadequate or unacceptable as per the definitions below. Adequate = all of above points covered on discharge summary (if applicable). The last point may not always be applicable in ED. The second last may be covered verbally and is not always documented in the summary. Medication appropriate and prescribed in relation to current illness and illness severity. Adequate, self discharge with attempt to contact = Patient has self-discharged without notifying healthcare professionals and has not been given prescription as no opportunity to do so. Inadequate = inaccurate or incomplete (missing points above if they are applicable) discharge medication information. Medication not prescribed in relation to current illness or illness severity, but unlikely to cause harm. Unacceptable = wrong medication information (wrong dose, wrong medication), not prescribed in relation to current illness or illness severity and likely to cause harm. Not Available = notes for event not available. If patient self discharges and is given a prescription, the adequacy of the medication information is judged as per if they had not self-discharged.
Expressed As	Categorical

8.4.14 Review (General Follow-up) Information

Fieldname	<i>rvinfo</i>
Definition	Whether or not the patient has information recorded on the discharge letter as to when their next expected medical review should be.
Layout	N (Number: 1 Characters)
Codeset (If Applicable)	1 = Adequate 2 = Inadequate 3 = Unacceptable 4 = Not Available
Reported For	Includes: All Events discharged from ED (includes ED Short Stay patients and patients discharged from the ED under the care of an inpatient specialty) Excludes: All patients admitted to an inpatient ward
Description	Should be accessible from electronic records and also paper patient records. This information details when to seek medical advice again, it should include: • Service (with whom) • Specific timeline for follow-up • Advised review with GP if needed • Advised review in ED in the event of serious complications Adequate = any of above points covered on discharge summary and documented if applicable, or no review needed and documented Inadequate = Incomplete medical review information. Unacceptable = wrong or unrecorded medical review information Not Available = notes for event not available.
Expressed As	Categorical

8.4.15 Overall Adequacy Discharge Information

Fieldname	<i>dcoverallad</i>
Definition	The overall adequacy of discharge information
Layout	N (Number: 1 Characters)
Codeset (If Applicable)	1 = Adequate 2 = Inadequate 3 = Unacceptable
Reporting	Mandatory
Description	Regularly • Discharge Diagnosis • Treatment Information • Treatment Complications Information • Procedure Information • Procedure Complications Information • Investigation Results Information • GP-Specific Ongoing Care Information • Patient Information Adequacy - Overall • Discharge Medication Information • Review (General Follow-Up) Information Adequate = Discharge Diagnosis must be adequate. To be overall adequate the discharge summary must have scored adequate in all 10 of the components. (If patient specific info on d/c summary is inadequate, but clinical notes adequate can have overall adequate for patient info and vice versa). Inadequate = less than 10 out of 10 above points Unacceptable = any point rated as unacceptable – this is something that may have the potential to cause harm to the patient, or no discharge summary completed for event.
Expressed As	Numeric (Percentage)
Numerator	The number of discharge summaries that are adequate, inadequate or unacceptable respectively
Denominator	Total number of eligible patients in audit
Summary Statistic	Proportion %(95% CI)

9.0 Performance of Observation / Short Stay Units

The ED advisory group to the ministry of health produced a guidance document regarding ED observation units and inpatient assessment units. The following is taken from this document. While inpatient assessment units are discussed and defined this performance measure relates to ED observation units and not inpatient assessment units. For the purpose of this performance measure Short Stay Units (SSU) and ED observation units are considered interchangeable terms.

ED Observation Units¹⁶

ED Observation Units are valuable for reasons of efficiency, patient comfort and patient safety. They prevent hospital admissions, allow prolonged ED care in a more conducive environment (on a bed rather than a stretcher, with less light and noise than the main ED), and offer an alternative to discharge of patients when it may be unsafe or inappropriate to do so (e.g., elderly patients at night).

The **key features** of an ED Observation Unit are generally:

- Allow a short period of observation, further treatment, or further investigation by ED staff
- For patients who are perceived to be safe for discharge at the end of that period
- There is usually no need, or an unlikely need, for input from inpatient staff/teams
- Duration of stay is usually 6 to 8 hours, but up to a maximum of 24 hours.

For the purposes of the Shorter Stays in ED health target, admission to an ED Observation Unit or bed stops the ED length of stay clock. To avoid any potential for confusion or manipulation of 'observation' status, patients and beds that can be legitimately designated as 'observation' and 'stop the clock' should have dedicated staffing, patients in beds rather than trolleys, and be located in a dedicated space. There may be some exceptions to this where the patient is receiving appropriate and 'value-added' care (e.g., observation of an overdose patient in a monitored area). Such exceptions should be formally approved as departmental policy by the Clinical Director of the ED and should be discussed and agreed with the National Clinical Director of ED Services.

Governance of an ED Observation Unit, including resourcing, clinical management, standards, policies and procedures, should be with the ED. Other specialties and departments may contribute to clinical pathways and guidelines but do not have a governance role.

Inpatient Assessment Units:

Inpatient Assessment Units go by a range of names: Medical Assessment and Planning Unit (MAPU), Surgical Assessment and Planning Unit (SAPU), Admission and Planning Unit (APU), Acute Medical Assessment Unit (AMAU), Acute Assessment Unit (AAU) etc. But in general they are designated hospital wards that are specifically staffed and equipped to receive acute inpatients (usually medical) for assessment, care and treatment for a designated period (usually 36-48 hours) prior to transfer to an inpatient ward or home, if appropriate.

Inpatient Assessment Units concentrate patient assessment and planning activities with the aim of streamlining care processes and length of stay. In doing so they also enhance the capacity of the ED by relieving the ED of non-critically ill patients and the assessment, admission and discharge processes associated with these patients.

The **key features** of an Inpatient Assessment Unit are generally:

- Provide initial management (assessment, diagnostic workup, 'clerking' and initial treatment) of patients referred to specialty inpatient teams by a General Practitioner (GP), ED staff, or other clinicians
- Usually 'specialty' specific – most often Acute General Medicine – but may be used by more than one specialty
- Patients gain entry either via the ED or by direct referral from primary care, usually following consultation with the receiving clinician
- Patients referred directly to an Inpatient Assessment Unit (e.g., by a GP) will usually (but not always) be triaged in the ED to confirm the appropriateness of the transfer and ensure that they are well enough (not requiring resuscitation or stabilisation in the ED)
- Maximum duration of stay is usually intended to be between 24 and 48 hours, with patients either going home in that time, or transferred to a ward for ongoing care
- Some units may have additional criteria for admission, such as low complexity patient, or patients likely to go home within 48 hours.

Governance of an Inpatient Assessment Unit is usually similar to the governance of an inpatient ward of an inpatient specialty. Medical staff may be dedicated to the unit or they may be from the acute team of the day. While ED will contribute to defining process and quality control, particularly in relation to transfer of patients from the ED to the Inpatient Assessment Unit, the ED does not have a governance role. Inpatient Assessment Units can offer opportunities for further innovations aimed at reducing hospital admissions, including acute/follow-up clinics, chest pain assessment, formal linkages between hospital and community care, etc.

For the purposes of the Shorter Stays in ED health target, GP referrals that are assessed at the ED triage desk and then directed to an Inpatient Assessment Unit without further ED intervention are excluded from the target altogether. For all other patients transferred from the ED, admission to an Inpatient Assessment Unit stops the ED length of stay clock. 'ED intervention' in this instance

can encompass more detailed nursing assessment (over and above triage) and minor procedures such as analgesia or administration of intravenous fluids.

Other Units

Short Stay is a broad term used to describe a number of different units, including short stay surgical units, inpatient units for acute patients who are expected to need a maximum of 24-48 hours in hospital, Assessment Units and Observation Units. The term 'Short Stay' does not describe a value adding function however, and often units with this name have a mixture of intended function and do not perform well for the reasons previously described.

Clinical Decision Units are similar to ED Observation Units, but patients are usually admitted to the unit according to a well defined, problem specific pathway.

Chest Pain Units are a CDU specifically for the diagnostic workup of patients with chest pain who are considered to be low risk for Acute Coronary Syndrome. These may be in, or associated with, the ED and under the ED's governance, or may be associated with an inpatient specialist unit and under their governance.

Holding or Decant Wards, as the name implies, can be used to hold patients while waiting to access the area they should be in. While not preferable, on occasion this 'holding' function can be useful if it allows transfer of patients out of the ED to a more comfortable environment, pending capacity becoming available on the definitive ward as discharges occur later in the day.

Smaller Hospitals

Ideally, an acute hospital will have an ED Observation Unit, an Inpatient Assessment Unit for Acute General Medicine, and possibly acute assessment facilities for General Surgery and other specialties. However, for smaller hospitals this may not be practical.

In cases where these beds are combined in a single space, it is important that they are separated, as much as possible, in practice. Suggested guidelines for doing so include:

- Ring fence particular beds for observation, medical assessment, flex etc.
- Define patient clinical and demographic criteria for admission to each type of bed
- Have ED observation patients admitted under the ED team with a doctor on the floor clearly identified as responsible for the patient. Similarly, have medical assessment patients admitted under the Medical Team with a doctor clearly identified as responsible for the patient, with a means of contact defined
- Define criteria for who responds to patient deterioration
- Define criteria for situations of ED overload, when the unit needs to be cleared and patients admitted to the ward
- Define performance expectations for all types of beds, including maximum length of stay thresholds, and expected discharge rates
- Have a management structure which allows appropriate governance and quality control.

9.1 LOS ED Observation Unit/SSU

Fieldname	<i>ssulos</i>
Definition	Length of stay of the ED observation / short stay unit – proportion (%) under expected LOS to be reported
Layout	NNNN (Number: 4 Characters)
Codeset (If Applicable)	n/a
Reporting	Discretionary
Frequency	Regularly
Description	The time from physical admission to the unit until physical departure (discharge or transfer to a ward) – percent under expected LOS. More than 80 percent of those admitted to an ED SSU or observation unit are anticipated to be under the expected LOS. “The expected length of stay of these units should be defined and monitored. Generally the expected length of stay would be 8 to 12 hours, although some might accept up to 24 hours. Whatever the model adopted it should be policed to ensure the majority (80% or more) are discharged within this time. This, and the next two measures, help ensure that the unit is used for appropriate observation patients, and not as a ‘work around’ for barriers to accessing inpatient care.”²
Includes	All patients under the care of an Emergency Medicine specialist who are admitted to an ED Short Stay ward
Excludes	Patients under the care of an Emergency Medicine specialist who are not admitted to an ED Short Stay ward, and patients under the care of inpatient teams.
Quality Measure	<i>(2.12) ED Departure Time - (2.11) ED SSU Admit / Assign Time</i>
Expressed As	Numeric (Time).
Numerator	Number of eligible patients meeting target for time of disposition
Denominator	Total number of eligible patients
Summary Statistic	Median Minutes (IQR) – standard measure <i>Mean (95%CI) – best reflects long lengths of stay</i> Proportion meeting target for time of disposition (95%CI)

9.2 Admission from ED Observation Unit/SSU

Fieldname	<i>ssuadmit</i>
Definition	Number of patients who are admitted from ED observation / short stay units to any inpatient team
Layout	NNNN (Number: 4 Characters)
Codeset (If Applicable)	n/a
Reporting	Mandatory
Frequency	Continuously
Description	This number is anticipated to be less than 20% of patients admitted to an ED SSU or observation unit. ED observations units are for patients who should be able to be cared for by the ED, without inpatient team input. Inevitably some patients will need referral to inpatient teams, but a proportion over 20% needing this suggests the observation unit is accommodating patients who should have been admitted to an inpatient unit instead of the observation unit.
Includes	All patients under the care of an Emergency Medicine specialist who are admitted to an ED Short Stay ward who are subsequently admitted under an inpatient team.
Excludes	Patients under the care of an Emergency Medicine specialist in an ED Short Stay ward who are discharged directly from the ED Short Stay ward.
Expressed As	Numeric (Count)
Numerator	Number of ED Short Stay patients admitted to an inpatient ward (including inpatient short stay wards such as APU/ADU/AMU/ASU etc.)
Denominator	Number of ED Short Stay patients
Summary Statistic	Proportion of ED Short Stay patients who are then admitted to an inpatient ward %(95%CI)

9.3 Utilisation ED Observation Unit/SSU

Fieldname	<i>ssuutil</i>
Definition	Utilisation of the ED observation / short stay unit as a proportion of total ED presentations
Layout	NNNN (Number: 4 Characters)
Codeset (If Applicable)	n/a
Reporting	Discretionary
Frequency	Continuously
Description	Less than 20% is expected A high proportion (over 20%) of total ED patients using the observation unit suggests the unit might be being used inappropriately.
Expressed As	Numeric (Count)
Numerator	Number of ED patients admitted to an inpatient ward (including inpatient short stay wards such as APU/ADU/AMU/ASU etc.)
Denominator	Number of ED Short Stay patients
Summary Statistic	Proportion of ED patients who are admitted to an ED Short Stay ward %(95%CI)

10.0 Appendix 1: ICD-10-AM Classification of Diseases Codes

For Clinical Audits, to be used in conjunction with data collection tools.

From: “The International Statistical Classification of Diseases and Related Health Problems, Australian Modification (Tenth Revision). Sixth Edition July 2008”

Myocardial Infarction: Diagnosis Codes

I21 Acute Myocardial Infarction

I21.0 Acute Transmural Myocardial Infarction of anterior wall (STEMI)

I21.1 Acute Transmural Myocardial Infarction of inferior wall (STEMI)

I21.2 Acute Transmural Myocardial Infarction of other sites (STEMI includes apical-lateral, basal-lateral, high lateral, lateral, posterior, posterobasal, posterolateral, posteroseptal, septal)

I21.3 Acute Transmural Myocardial Infarction of unspecified site (STEMI)

I21.9 Acute Myocardial Infarction, unspecified

Sepsis and Septic Shock: Diagnosis Codes

A39 Meningococcal Infection

A39.0 Meningococcal Meningitis

A39.1 Waterhouse-Frederickson Syndrome

A39.2 Acute Meningococcaemia

A39.3 Chronic Meningococcaemia

A39.4 Meningococcaemia, unspecified

A39.5 Meningococcal Heart Disease

A39.8 Other Meningococcal Infections

A39.9 Meningococcal infection, unspecified

A40 Streptococcal Sepsis

A40.0 Sepsis due to Streptococcus group A

A40.1 Sepsis due to Streptococcus group B

A40.2 Sepsis due to Streptococcus group D

A40.3 Sepsis due to Streptococcus Pneumoniae

A40.8 Other Streptococcal Sepsis

A40.9 Streptococcal Sepsis, unspecified

A41 Other Sepsis

A41.0 Sepsis due to Staphylococcus aureus

A41.1 Sepsis due to other specified Staphylococcus

A41.2 Sepsis due to unspecified Staphylococcus

A41.3 Sepsis due to Haemophilus Influenzae

A41.4 Sepsis due to anaerobes

A41.5 Sepsis due to other and unspecified gram-negative organisms

A41.50 Sepsis due to Escherichia Coli (E-Coli)

A41.51 Sepsis due to Pseudomonas

A41.58 Sepsis due to other Gram-Negative organisms

A41.8 Other specified sepsis

A41.9 Sepsis, unspecified (includes septic shock and septicaemia)

A48 Other Bacterial Diseases

A48.0 Gas Gangrene (clostridia)

A48.3 Toxic Shock Syndrome

A49 Bacterial Infection unspecified site

A49.9 Bacterial Infection, unspecified (Bacteraemia)

A42 Actinomycosis

A42.7 Actinomycotic Sepsis

A22 Anthrax

A22.7 Anthrax Sepsis

B37 Candidal Infection

B37.7 Candidal Sepsis

A26 Erysipeloid

A26.7 Erysipelothrix Sepsis

A28 Other zoonotic bacterial disease, not elsewhere classified

A28.2 Extra intestinal yersiniosis

A54 Gonococcal Infection

A54.8 Other Gonococcal Infections (Sepsis)

B00 Herpesvirus Infection

B00.7 Disseminated herpesviral disease (herpesvirus sepsis)

A32 Listeria Infection

A32.7 Listerial Sepsis

P36 Bacterial Sepsis of Newborn (includes congenital septicaemia)

P36.0 Sepsis of newborn due to streptococcus group B

P32.1 Sepsis of newborn due to other and unspecified streptococci

P36.2 Sepsis of newborn due to staph aureus

P36.3 Sepsis of newborn due to other and unspecified staphylococci

P36.4 Sepsis of newborn due to E-Coli

P36.5 Sepsis of newborn due to anaerobes

P36.8 Other bacterial Sepsis of newborn

P36.9 Bacterial Sepsis of newborn, unspecified

P37 Other Congenital an infectious diseases newborn

P37.2 Neonatal Disseminated Listeriosis

P37.52 Invasive Neonatal candidiasis (generalised neonatal Candidal sepsis)

T81 Complications of procedures, not elsewhere classified

T81.1 Shock during or resulting from a procedure, not elsewhere classified (septic shock post-procedural)

T81.4 Infection following a procedure, not elsewhere classified

T81.42 Sepsis following a procedure

O85 Puerperal Sepsis

A21 Tularaemia

A21.7 Generalised Tularaemia (Tularaemic Sepsis)

A24 Glanders and Melioidosis

A24.1 Acute and fulminating melioidosis (pneumonia, sepsis, septicaemia)

A20 Plague

A20.7 Septicaemic Plague

R57 Shock, not elsewhere classified

R57.8 Other Shock (Endotoxic Shock)

11.0 Appendix 2: ACHI Classification of Procedure Codes

Australian Classification of Health Interventions (Tabular List) – Sixth Edition July 2008

Myocardial Infarction: Procedure Codes:

667 Cardiac Catheterisation

38200-00 R heart catheterisation

38203-00 L heart catheterisation

38206-00 R and L heart catheterisation

668 Coronary Angiography

38215-00 Coronary Angiography

38215-00 Coronary Angiography L heart catheterisation

38218-01 Coronary Angiography R heart catheterisation

38218-02 Coronary Angiography R and L heart catheterisation

669 Excision Procedures on Coronary Arteries

38309-00 Percutaneous Transluminal coronary rotational atherectomy (PTCRA), 1 artery

38312-00 Percutaneous Transluminal coronary rotational atherectomy (PTCRA), 1 artery with insertion of 1 stent

38312-01 Percutaneous Transluminal coronary rotational atherectomy (PTCRA), 1 artery with insertion of ≥ 2 stents

38315-00 Percutaneous Transluminal coronary rotational atherectomy (PTCRA), multiple arteries

38318-00 Percutaneous Transluminal coronary rotational atherectomy (PTCRA), multiple arteries with insertion of 1 stent

38318-01 Percutaneous Transluminal coronary rotational atherectomy (PTCRA), multiple arteries with insertion of ≥ 2 stents

670 Transluminal Coronary Angioplasty

38300-00 Percutaneous Transluminal balloon angioplasty of 1 coronary artery

38303-00 Percutaneous Transluminal balloon angioplasty of ≥ 2 coronary arteries

671 Transluminal Coronary Angioplasty with Stenting

38306-00 Percutaneous Insertion of one Transluminal stent into a single coronary artery

38306-01 Percutaneous Insertion of ≥ 2 Transluminal stents into a single coronary artery

38306-02 Percutaneous Insertion of ≥ 2 Transluminal stents into multiple coronary arteries

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