MonashHealth



Rapid Review

Key Performance Indicators for Hospital Reporting

Citation

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Executive Summary

The Centre for Clinical Effectiveness (CCE) was asked to report on indicators that demonstrate a high performing hospital. To do so, we identified the most common and current reported domains and indicators of performance in healthcare.

Preliminary searches identified a 2013 report produced by the Australian Institute of Health Innovation (AIHI), University of NSW¹ which examined performance indicators used nationally and internationally to report publically on the performance of healthcare organisations and local health systems. This report was updated and results reported here include the AIHI¹ and publications from 2013 onwards.

For each report identified, information was extracted regarding domains and indicators. To identify the most current and frequently reported indicators, comparisons were made across each report identified. Where a minimum of three studies reported the same indicator, the indicator was selected as one that is considered important to measure for performance. These were then compared against the current set of indicators measured by Monash Health.

The literature highlighted key sets of indicators (reported by the greatest number of sources) and were categorised under the most commonly reported domains:

Domain	Indicators
Safety and Effectiveness	Mortality, unplanned hospital readmission, hospital acquired infections, safety of maternity services and cancer
Equity and Access	Emergency Department (ED) wait length, specialist care wait length
Efficiency/Value for money	Cost and length of stay
Patient Centered/Experience	Maternity and in-patient personal needs

The series of tables below (1a-d) show that there are a number of domains and indicators in the literature that are common with Monash Health.

Indicators highlighted green show similarities between the literature and Monash Health.

Indicators highlighted orange show additional/different indicators measured by Monash Health compared to what is reported in the literature.

Indicators highlighted red have been reported in the literature and **not** by Monash Health.

Indicators highlighted yellow are marked as performance priorities in the 2015-2016 Monash Health Statement of Priorities list.

This review has identified the most common and current reported domains and indicators of performance in healthcare and compared them to those measured by Monash Health. Similarities between domains and indicators between Monash Health and the literature were generally seen in Safety and Effectiveness and Patient Centered/Experience.

Table 1a. Safety and Effectiveness: domains and indicators

Indicators (from	licators (from literature) Monash Health Indicators		
Domain: Safety	and Effectiveness	Similar indicators	Additional/Different indicators
In-hospital mortality rates	 In-hospital mortality rates Ischaemic stroke and myocardial infarction²⁻⁴ In-hospital mortality rates of fractured neck of femur³⁻⁴ In-hospital mortality rates Pneumonia ³⁻⁴ Hospital-standardised mortality ratios⁴ Hospital 30 day mortality Deaths in low mortality diagnosis related groups (headache, hand procedures, arthroscopy)⁴ Deaths from VTE events⁵ 	 % Low mortality Diagnosis Related Group (DRG) admissions resulting in in-hospital mortality % Acute Myocardial Infarction (AMI) admissions resulting in in-hospital mortality % Fractured neck of femur admissions resulting in in-hospital mortality % Pneumonia admissions resulting in in-hospital mortality Hospital Standardised Mortality Ratio (HSMR) Rate of preventable hospital acquired DVT/PE per 1,000 separations 	 % Heart failure admissions resulting in inhospital mortality % Stroke admissions resulting in inhospital mortality Percentage deaths coded but not recorded in Victorian Health Incident Management System (VHIMS) death module Percentage deaths classifications confirmed within 60 days Number of preventable deaths per month Number of death rate of outliers versus inliers
Unplanned hospital readmission	 Infant mortality – deaths per 100 live births⁶ 30 day hospital readmission ⁵⁻⁶ Unplanned hospital readmission rates for patients discharged following management of: acute myocardial infarction, heart failure, knee replacements, schizophrenia, paediatric tonsillectomy and adenoidectomy ³⁻⁴ Unplanned hospital readmission rates for patients discharged following management of: depression Emergency readmissions within 30 days of discharge from hospital⁵⁻⁶ The rate of readmission for heart failure patients, pneumonia patients, hip and knee replacement patients have been identified as important indicators¹ 	 % Acute Myocardial Infarction (AMI) unplanned re-admission within 30 days % Heart failure unplanned re-admissions within 30 days % Paediatric tonsillectomy/adenoidectomy unplanned re-admissions within 15 days % Knee replacement unplanned re-admissions within 60 days % Hip replacement unplanned re-admissions within 60 days % Depression unplanned re-admissions within 28 days % Schizophrenia unplanned re-admissions within 28 days 	% HITH unplanned re-admissions within 28 days

Indicators (from	literature) Monash Health Indicators		
Domain: Safety	y and Effectiveness	Similar indicators	Additional/Different indicators
Hospital associated infection	 Sepsis following abdominal surgery² Incidence of healthcare-associated staphylococcus aureus bacteraemia including Methicillin-resistant Staphylococcus aureus (MRSA) ^{1,3,6} Incidence of healthcare-associated c.difficile infection^{1,5} The percentage of patients with a hospital acquired infection¹ Hand hygiene statistics¹ The percentage of occasions central line bundle¹ Discharges with central venous catheter placement with associated bloodstream infections¹ Catheter- associated urinary tract infection¹ 	 Rate of sepsis per 1,000 bed days Rate of hospital acquired sepsis per 1,000 bed days VICNISS - Hospital acquired infection (Overall) Rate of hospital acquired Staph. Aureus Bacteraemia Rate of Clostridium difficile Rate (plus raw number) of hospital acquired severe sepsis and septic shock per month Rate (plus raw number) of deaths in patients with hospital acquired severe sepsis and septic shock per month Number of hospital acquired sepsis of outliers versus inliers 	 Dandenong Hospital colorectal surgery deep surgical site infection (SSI) Dandenong Hospital colorectal surgery superficial surgical site infection (SSI) All Dandenong Hospital colorectal surgery surgical site infection (SSI) Monash Health cardiothoracic surgery deep surgical site infection (SSI) Monash Health cardiothoracic surgery superficial surgical site infection (SSI) All Monash Health cardiothoracic surgical site infection (SSI) Number of patients with surgical site infections Rate of patients with postoperative wound dehiscence Rate of patients with postoperative wound haemorrhage Central line associated bloodstream infections (ICU) - Dandenong Hospital Central line associated bloodstream infections (ICU) - Monash Medical Centre
Hospitalisati- on	 Patients hospitalised with an ischaemic cardiovascular (CVD) event (myocardial infarction, ischaemic stroke and/or coronary or peripheral arterial procedure) who have receive triple therapy (statin, a blood pressure-lowering medicine, an antiplatelet or anticoagulant medicine)¹, Hospitalisations for congestive heart failure, asthma, chronic obstructive pulmonary disease, and diabetes complications² The percent of patients hospitalised with heart 	No MH indicators measured	

Indicators (from	m litera	ature)	Monash Health Indicators	
Domain: Safety and Effectiveness		Effectiveness	Similar indicators	Additional/Different indicators
Mental Health	• E	ailure who received recommended care has also been measured¹ Emergency admissions for acute conditions hat should not usually require hospital admission⁵ The proportion of hospitalised nations with		Number of reportable Mental Health
Mental Health	s d T d d u	The proportion of hospitalised patients with schizophrenia assessed for suicide risk at discharge ¹ The proportion of hospitalized patients with depression assessed for suicide risk at discharge ¹ The proportion of hospitalized patients with depression discharged with a planned follow-up ¹ Suicide deaths per 100,000 population ⁶		 Number of reportable Mental Health deaths Percentage of adult Mental Health patients who have post discharge follow-up within 7 days Percentage of child and adolescent Mental Health patients with post-discharge follow-up within seven days Percentage of aged Mental Health patients who have post-discharge follow up within seven days Rate of mechanical restraint per 1,000 bed days Rate of seclusion exceeding 4 hours - Adult only Rate of seclusion per 1,000 bed days Percentage of Seclusion events relating to an acute admission (composite seclusion rate) Rate of seclusion events relating to an adult acute admission Rate of seclusion events relating to a child and adolescent acute admission Rate of seclusion events relating to an aged acute admission Number of inpatient absconds Number of inpatients absent without leave

Indicators (from	n literature)	Monash Health Indicators	
Domain: Safety	and Effectiveness	Similar indicators Additional/Different indicators	
			 (AWOL) Number of intentional self-harm Number of reportable Mental Health deaths 28 day re-admission rate - Adult only
Post- operative VTE	 Serious blood clots after surgery¹ Post-operative venous thromboembolism following hip/knee surgery² 	No MH indicators measured	
Harm	The incidence of medication errors causing serious harm ¹	Number of Incident Severity Rating (ISR) 1 & 2 rated medication errors.	
	Safety incidents involving severe harm or death¹	Number of ISR 1 & 2 rated medication errors per 1,000 bed days	
	Deaths attributable to problems in healthcare 5-	Number of ISR 1 & 2 rated patient incidents	
	Severe harm attributable to problems in healthcare ⁵	 Total number of patient incidents Total number of sentinel events Number of ISR 1 & 2 patient medication 	
		prescribing, administration or dispensing incidents	
		Number of medication administered to the wrong patient	
		Number of incorrect medication administered	
		Rate of medications administered despite known allergy	
		Rate of medication prescribing or dispensing incidents despite known allergy (near misses)	
		Total number of ISR 1 & 2 incidents related to wrong patient/site/side/modality procedures	
		Clinical handover incidents per 1,000 reported incidents	
		Rate of transfusion related incidents per 1,000	

Indicators (fro	m literature)	Monash Health Indicators	
Domain: Safet	y and Effectiveness	Similar indicators	Additional/Different indicators
		 units of blood issued Rate of reported transfusion reactions (Blood and blood products) per 1,000 units transfused 	
Safety of maternity services	 The admission of full term babies to neonatal care^{1,5} Rate of instrumental vaginal birth¹ Obstetric trauma rate (with/without instrument)¹ 	No MH indicators measured	
Cancer	 The proportion of patients having radical surgery for lung cancer¹ Proportion of patients with consistency between clinical (ctnm) and pathological (ptnm) classification for lung cancer¹, Lung cancer patient survival post-surgery (4 indicators - 30 days, 1 year, 2 years, 5 years)¹ Unplanned re-interventions after a resection of a primary colorectal cancer, Complications from surgical treatment of oesophageal or gastric cancer, Percentage of patient in whom cancer tissue is remaining after initial breast conserving surgery¹. Five year relative survival rates are used with cervical cancer patients, breast cancer patients all measured² Breast cancer deaths in females and colorectal cancer deaths are measures per 100,000 population6 	No MH indicators measured	

Indicators (from	n literature)	Monash Health Indicators	
Domain: Safety	and Effectiveness	Similar indicators	Additional/Different indicators
Falls	 The proportion of hip fracture patients with plan for future fall prevention¹ have been highlighted as important indicators. Percentage of older patients assessed for the risk of falling is also an important indicator¹. Hip fractures from falls during hospital care⁵ 	Rate of acute falls resulting in serious injury (All ISR - excluding residential) per 1,000 bed days	 Rate of acute falls (All ISR - excluding residential) per 1,000 bed day Number of sub-acute falls (all ISR) Number of sub-acute falls resulting in serious injury (ISR 1 & 2) Number of residential falls (all ISR) Number of residential falls resulting in serious injury (ISR 1 & 2)
Pressure ulcers	The rates of severe pressure sores ¹ , and proportion of patients with category 2, 3, 4 pressure ulcers are used as critical indicators in the literature ⁵ .	Rate of pressure injuries per 1000 bed days	

Table 1b. Equity and Access: domains and indicators

Indicators (from literature)		Monash Health Indicators
Domain: Equity and Access		
ED wait length	 Timeliness in ED wait length is an important indicator¹-³. Percentage of patients who attend and ED who depart within four hours of arrival (≥90% Green, 85.0% - 89.9% Amber, <85.0% Red)¹,³. ED wait length indicators include patients admitted, discharged or transferred from an ED within six hours¹, Patients admitted from ED within eight hours¹, Average time patients who came to the ED with broken bones had to wait before receiving pain medication¹, 	No MH indicators measured
	 Percentage of patients who left the ED before being seen¹, Percentage of patients who came to the ED with stroke symptoms who received brain scan results within 45 minutes of arrival¹. 	
Specialist care	A number of indicators are noted for specialist care wait length ¹⁻³ .	No MH indicators measured

Indicators (from li	terature)	Monash Health Indicators
Domain: Equity and Access		
wait length	percentage of unseen specialist outpatients waiting more that the clinically recommended timeframe for their urgency category (category 1: 30 days, category 2: 90 days, category 3: 365 days)	
	patients who said the time they waited to be admitted to hospital was 'about right'	
	an 18 week maximum wait from referral to treatment for planned procedures	
	other scheduled surgery wait times	
	proportion of acute stroke patients admitted to acute stroke unit within four hours of arrival at hospital	
	Interval in patients with TIA/Stroke to surgery	
	outpatients with chest pain or possible heart attack who got aspirin within 24 hours of arrival	
	outpatients with chest pain or possible heart attack who got drugs to break up blood clots within 30 minutes of arrival	
	average number of minutes before outpatients with chest pain or possible heart attack who needed specialized care were transferred to another hospital	
	heart attack patients given fibrinolytic medication within 30 minutes of arrival	
	heart attack patients given PCI within 90 minutes of arrival	
	Coronary Artery Bypass Graft (CABG) Wait Time for Urgent Category (Urgency Level I)	
	Coronary Artery Bypass Graft (CABG) Wait Time for Semi-Urgent Category (Urgency level II)	
	Coronary Artery Bypass Graft (CABG) Wait Time for Scheduled Category (Urgency level III)	
	Hip Fracture Surgical Procedures Performed Within 48 Hours: Wait Time Across Facilities	
	Hip Replacement Wait Time	
	Knee Replacement Wait Time	
	12 month maximum wait for IVF for eligible patients	

Indicators (from literature)		Monash Health Indicators
Domain: Equity ar	nd Access	
	Cataract Surgery Wait Time.	
Elective surgery wait length	Median waiting time for elective surgical procedures, elective surgical procedures performed on time and number of procedures are noted as key indicators for elective surgery wait length ¹ .	No MH indicators measured
Preventable hospitalisations for chronic disease	 Disparities in effectiveness: avoiding hospitalisations for chronic conditions – people with three or more ED visits or hospitalisations in a year, asthma hospitalisations for select chronic and vaccine-preventable conditions². Chronic conditions (≤HHS specific target Green; ≤1.0% above HHS target Amber; >1.0% above HHS target Red)³. 	No MH indicators measured

Table 2c. Efficacy/Value for money: domains and indicators

Domain: Efficacy/Value for money		Monash Health Indicators
Length of stay	 The average mean length of stay (LOS) for a given Australian Refined Diagnosis Related Group (AR-DRG) for patients who stay one or more nights in hospital³ Average LOS per birth and relative stay index² 	Average length of stay outliers versus inliers
Cost	Administrative service expense as a percentage of total expense ¹ ,	No MH indicators measured
	Cost per weighted case ¹ ,	
	Year to date funded and cost per weighted activity unit ³ ,	
	Healthcare expenditure per capita by potential years of life lost²,	
	Cost of hospitalisations and ED visits – average cost of ED visit by admission status, recurrent cost per hospitalisation and per maternity separation ²	
	The Hospital and Health Service full-year forecast operating position ³	

Table 1d. Patient Centered / Experience: domains and indicators

Indicators from the literature		Monash Health Indicators	
Domain: Patient	Domain: Patient Centered / Experience		Additional/different
Maternity	Women's experience of maternity services ^{1, 3, 5}		 Rate of term babies with Apgar scores less than 7 @ 5 mins per 100 births Rate of deliveries at 40 weeks gestation or beyond with Intrauterine Growth Restriction (IUGR) Gestational standardised perinatal mortality rate Maternity - Percentage of women with prearranged home care
In-patient personal needs	Responsiveness to in-patient personal needs ^{3,5}	Percentage of patients reporting a positive experience (VHES	
porcona nocac	Patient Centered Hospital Care ⁶ was documented as an important metric for performance in patient experience.	quarterly)	
Outpatient services	Studies report the improvement and measurement of outpatient services as a key measure of patient experience ^{3, 5} .	No MH indicators measured	
Emergency Department services	Studies report the improvement and measurement of emergency services as a key measure of patient experience ^{3, 5} .	No MH indicators measured	

Background

The Centre for Clinical Effectiveness (CCE) was asked to report on indicators that demonstrate a high performing hospital.

Objectives

To identify the most common and current reported domains and indicators of performance in healthcare.

Inclusion Criteria

Table 2. Inclusion criteria

Population	Include: Public and private hospitals			
Concept	Include: All types of quality performance indicators (not limited to access, safety, efficiency etc)			
Context	Include: Hospitals Exclude: Other healthcare settings (e.g. GP or community)			
Types of evidence	Include: Reviews, reports, websites, online data Documents that have summarised/reviewed hospital performance indicators, most up to date current literature within a jurisdiction will be presented.			
Limits	Date: 2013 – 2016 Language: Publications in English			

Search strategy

Database search strategy

Preliminary searches identified a 2013 report produced by the Australian Institute of Health Innovation (AIHI), University of NSW¹ which examined performance indicators used nationally and internationally to report publically on healthcare organisations and local health systems. This report was used to inform and structure a search of the databases to identify any new information from documents that had reviewed and summarised performance indicators from 2013 onward.

The AIHI document¹ summarised information relevant to key performance domains and indicators for local level health services both nationally and internationally. Therefore, the decision to use the reported search and update with more current information.

Medline was searched from 2013 onward using search terms outlined previously¹. Full search details are available in Appendix 1, Table 3 & 4.

Internet search strategy

An internet search strategy was conducted using the Google 'Advanced Search' function. Search results were limited to documents in English. Search terms used were: "measure, monitor, indicators and "hospital performance".

Reviewers also searched the following organisational websites for additional information using the same search terms: The kings Fund, The Health Foundation, Sax Institute, the Advisory Board, the Commonwealth Fund (USA) and AHRQ.

Study Selection

Titles and abstracts identified were exported to EndNote X7 (Thompson, Reuters, Carlsbad, California, USA). Studies identified were screened using inclusion and exclusion criteria established *a priori*. Searches of Medline, Google and organisational websites were screened by one reviewer in consultation with colleagues as necessary. Reports and studies were included based on the above criteria.

Data collection process

Data was extracted by multiple reviewers. For each report, information was extracted regarding domains, and indicators. To summarise clinical indicators that are important to hospital performance, the most common and current

indicators reported in the literature have been selected. To do this, each indicator from the respective included studies ⁶ were extracted and tabulated. Extracted indicators were then compared across each study. Where a minimum of three studies reported the same indicator, the indicator was selected as one that is considered important to measure for performance.

Results

Summary of findings

A search of the Medline database identified 212 results after duplicates were removed. No studies from the Medline search met the inclusion criteria. The Google search retrieved 200 results. Four reports¹⁻⁴ were included from the Google search, and two⁵⁻⁶ from searches of known websites listed in Appendix 1, Table 3.

One report met our inclusion criteria for a document that summarised multiple domains and indicators for hospital reporting¹. This report examined performance indicators used internationally to report publicly on healthcare organisations and local health systems. We did not identify any other documents that did this post 2013. Additional information included in this review is from single health system jurisdictions in Australia²⁻⁴, the UK⁵ and USA⁶.

Summary of domains for key performance measurement

Thirteen domains were identified, with four domains most commonly reported in the literature (that is, where three or more sources made reference to them). These domains include:

Safety and Effectiveness¹⁻⁶

Equity and Access¹⁻³

• Efficiency/Value for Money¹⁻³

Patient Centred / Experience^{1,3,5-6}

See Appendix 1, Table 5 for full details

Indicators that fell under the following nine domains were not included in this review as they were only reported by one or two sources. These were described in the AIHI report¹ hence reflecting key areas of interest but were not reported in the updated literature. These included:

Timeliness

Acceptability

Continuity

Competence/capability

Responsiveness

• Outcomes of care/health improvement

Avoidable hospital use¹

Sustainability^{1,2}

Enhancing quality of life for people with long-term conditions

Summary of specific indicators for performance measurement

Key indicators (reported by the greatest number of sources), categorised under each domain below, were evident in the literature:

Domain	Indicators			
Safety and Effectiveness	Mortality, unplanned hospital readmission, hospital acquired infections, safety of maternity services and cancer			
Equity and Access	ED wait length, specialist care wait length			
Efficiency/Value for money	Cost and length of stay			
Patient Centered/Experience	Maternity and in-patient personal needs			

The series of tables (1a-d) included in the executive summary show that there are a number of domains and indicators in the literature that are common with Monash Health. Indicators highlighted green show similarities between the literature and Monash Health, those highlighted orange show additional/different indicators measured by Monash Health compared to what is reported in the literature. Where an indicator is reported in the literature and not by Monash Health, these items are highlighted red. Indicators highlighted yellow are marked as performance priorities in the 2015-2016 Monash Health Statement of Priorities list.

Discussion

The AIHI 2013¹ report was the most up to date resource that included an extensive review of international performance indicators that are used to report nationally consistent and locally relevant information on healthcare organisations. The AIHI stated that a logical, acceptable, and viable framework encompassing multiple domains and with balanced representation from structure, process and outcome indicators is deemed important for measuring hospital performance. They also stated that there were no simple answers to questions such as how many indicators were optimal to determine this.

The additional sources identified in this review concurred with the domains and indicators included in the AIHI review as well as those currently reported by Monash Health.

Conclusion

In conclusion, the most commonly reported domains and relevant indicators included in the literature were Safety and Effectiveness (mortality, unplanned hospital readmission, hospital acquired infections, safety of maternity services and cancer), Equity and Access (ED wait length, specialist care wait length), Efficiency/Value for money (cost and length of stay) and Patient Centered/Experience (maternity and in-patient personal needs). Overlap between domains and indicators between Monash Health and the literature were seen in Safety and Effectiveness and Patient Centered/Experience.

References

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Appendix 1

Table 3. Information Sources

Information sources	Date of search	Information sources	Date of search
Google	16/06/2016	The Advisory Board	29/06/2016
Medline	22/06/2016	Sax Institute	29/06/2016
The Kings Fund	28/06/2016	AHRQ	20/07/2016
The Health Foundation	29/06/2016	The Commonwealth Fund	20/07/2016

Table 4. Search Terms

Sear	Search terms in Medline		
1	"performance indicator*".af.		
2	*"Quality Indicators, Health care"/		
3	*quality indicators, / or *risk adjustment/ or *"standard of care"/ or *data collection/ or *"outcome and process assessment (health care)"/ or *"outcome assessment (health care)"/ or *patient satisfaction/		
4	*Quality Indicators, Health Care/		
5	(impact or perverse or effectiveness).mp.		
6	4 and 5		
7	*Health Status Indicators/		
8	4 or 7		
9	performance.mp.		
10	*Quality Indicators, Health Care/ or *"Outcome Assessment (Health Care)"/		
11	*"Process Assessment (Health Care)"/		
12	10 or 11		
13	"performance assessment".mp.		
14	"performance measurement".mp. or *"Outcome and Process Assessment (Health Care)"/		
15	"performance monitoring".mp.		
16	"performance evaluation".mp.		
17	"performance target".mp.		
18	12 or 13 or 14 or 15 or 16 or 17		
19	(impact* or develop* or effective* or perverse or reporting or collect* or implement* or framework*).m_titl.		
20	18 and 19		
21	limit 20 to (english language and yr="2013 -Current")		

22	(australia* or canad* or "united states" or "USA" or america* or danish or denmark or dutch or netherlands or english or england or scotland or scottish or "new zealand" or UK or NHS).ab.
23	21 and 22

Table 5. Comparisons of health performance framework domains

Domains (Italics indicates domain names used by health performance frameworks)	AIHI	NHS Outcomes Framework	ACSQHC	QLD Health	BHI NSW	The Commonwealth Fund
Safety and Effectiveness						
Safety & Quality						
Treating and caring for people in a safe environment and protecting them from avoidable harm Preventing people from dying prematurely						
Hospital standardised mortality ratio						
Death in low-mortality Diagnosis Related Groups	✓	✓	✓	✓	✓	✓
Unplanned/unexpected hospital readmission of patients discharged						
Effectiveness - safety & quality						
Effectiveness						
Prevention and treatment						
Helping people recover from episodes of ill health or following injury						
Equity and Access						
Equity	✓			√	1	
Access	•			•	•	
Appropriateness						
Efficiency/Value for Money						
Efficient	√			1	./	
Cost Capacity	•			v	V	
Efficiency and Financial performance						
Patient Centred / Experience						
Ensuring that people have a positive experience of care	✓	✓		✓		✓
Patient Experience						
Other Domains						
AIHI	Timely, Outcomes of care/health improvement, acceptability, competence/capability, continuity, responsiveness, avoidable hospital use					
AIHI & BHI Sustainability						
NHS Enhancing quality of life for people with long-term conditions				ions		