EVIDENCE BRIEF

Management of acute ischaemic heat disease:

Acute coronary syndromes management

(DCP4 ID: CVD04-02)

Cluster: Cardiovascular & related disorders

FairChoices

DCP Analytic Tool

Management of acute coronary syndromes with thrombolytics

Authors: Pickersgill S, Watkins D, Coates MM, Ahmed S, Kaur G, Hirpesa GM, Økland JM, Haaland ØA, Johansson KA

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Description of condition and intervention

Acute coronary syndrome (ACS) is type of coronary artery disease (CAD), which accounts for 16% of total deaths and 129 million disability-adjusted life years (DALYs) globally (Udaya Ralapanawa1, 2021). The three types of ACS are non-ST-elevation myocardial infarction (NSTEMI), ST-elevation MI (STEMI), and unstable angina. The risk factors for this health problems are smoking, hypertension, diabetes, hyperlipidaemia, physical inactivity, poor nutrition. Thrombolytic therapy is given for patients with ST-segment elevation MI (STEMI). This therapy includes eminase, retavese, streptase, t-PA, TNkase and abbokinase.

International guidelines

Organization	Indications/recommendations
ESC, 2017 NICE, 2021	Guidelines for the management of acute Acute coronary syndromes

Intervention attributes

Type of interventions

Curative

Delivery platform

This intervention is most effective when delivered at referral and speciality hospitals.

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Equity

In addition to considerations like cost-effectiveness and health systems factors, dimensions of equity can be relevant for priority setting. The opportunity for a long and healthy life varies according to the severity of a health condition that individuals might have, so there are inequities in individuals' opportunities for long and healthy lives based on the health conditions they face. Metrics used to estimate the severity of illness at an individual level can be used to help prioritize those with less opportunity for lifetime health. FairChoices: DCP Analytics Tool uses Health adjusted age of death (HAAD), which is a metric that estimates the number of years lived from birth to death, discounting years lived with disability. A high HAAD thus represents a disease less severe in terms of lifetime health loss, while a low HAAD represents a disease that is severe on average, causing early death or a long period of severe disability. It is also possible to estimate the distribution of HAAD across individuals with a health condition. FairChoices shows for each intervention an average HAAD value of the conditions that are affected by respective interventions that have health effects. Additionally, a plot shows HAAD values for around 290 conditions (Johansson KA et al 2020).

Time dependence

High level of urgency. Treatment outcomes may be highly affected by some hours of delay.

Population in need of interventions

The population in need of this intervention was assumed to be incident cases of myocardial infarction due to ischemic heart disease in adults aged 30-99 years, both genders.

Affected population comprises of individuals aged 30 to 99 years, assuming that 37% of IHD deaths are from myocardial infarction. This is based on the rates in the UK from years 1981 to 1983. Further, it is assumed that 40% of acute coronary syndrome cases require thrombolytics.

Disease state addressed

This intervention targets ischaemic heart disease.

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Intervention effect and safety

Table 1: Effect and safety of medical management for medical management of acute coronary syndrome

Effect of intervention		Certainty of evidence
Mortality (due to condition)	Efficacy estimates from the Tolla et. al. 2016 suggest a 22% reduction by aspirin, 26% reduction by streptokinase, and a 59% reduction from clopidogrel and 14% with statin (Yu S et at 2020). The effect of including aspirin is included in the Aspirin for suspected ACS intervention to avoid double counting the benefits and not considered here. Also, 40% of cases receive thrombolytic like streptokinase. Therefore, estimation of aggregated effect size for mortality reduction from this intervention as: (1 - (0.87*0.896*0.76*0.41) *37% IHD deaths attributable to acute MI=0.2812	See appendix

Model assumptions

Table 2: Summary of model parameters and values used in FairChoices – DCP Analytical Tool

Category	Model parameter	Notes
Intervention	Management of acute coronary syndromes with thrombolytics	Ischaemic heart disease
Cost calculation		
Treated population	Incident cases of myocardial infraction due to Ischaemic heart disease	Global Burden of Disease Study 2019
Gender	Both male & female	
Age	30-99 years	
Treated fraction	1	Based on incidence of IHD
Effect calculation		
Affected population	Incident cases of myocardial infraction	

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	due to Ischaemic heart disease	
Affected gender	Both male & female	
Affected fraction age	30 to 99 years	
Affected fraction	1	
Comparison	No intervention	
Mortality Reduction (RRR)	0.2812	See Table 1

Intervention cost

Unit costs is that of prehospital thrombolysis for myocardial infarction (MI) from a study in Brazil. Costs were USD 1383.8 for prehospital thrombolysis with acute MI (Araújo et al 2008).

References

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NICE 2021: Acute coronary syndromes: early management of acute STEMI: Available here: http://pathways.nice.org.uk/pathways/acute-coronary-syndromes-early-management.

Appendix

Literature Review for effectiveness & safety

This literature search is an example of Level 1 search for intervention inputs taken from DCP3 or generated in an ad hoc manner (e.g., quick google search found one study of cervical cancer screening cost-effectiveness that was used to create an effectiveness parameter for that intervention).

Level of evidence of efficacy studies:

1. low (expert opinions, case series, reports, low-quality case control studies)

2. moderate (high quality case control studies, low quality cohort studies)

3. high (high quality cohort studies, individual RCTs)

4. very high (multiple RCTs, metaanalysis, systematic review, clinical practice guidelines).