NSW Ambulance

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Service Planning Methodology
NSW Ambulance

Introduction

NSW Ambulance Service Planning is responsible for analysis of current and future resourcing to facilitate effective mobile health care delivery across NSW. A key element in planning is the ability to estimate demand for incidents and transport requirements and to predict the need for capital, financial and human resources. Projection of future requirements is necessary to plan for the location of ambulance stations, the number of vehicles and staff required at each station, and the most appropriate models of care to respond to growing demand.

Emergency demand

NSW Ambulance responds to both emergency and non-emergency incidents. Emergency incidents occur when a Triple Zero (000) call is received. Non-emergency incidents include hospital-to-hospital transfers, patient transport to medical appointments and standby at sporting events. Emergency Demand primarily includes NSW Ambulance Priority response categories of Priority 1 (P1) and Priority 2 (P2). Response Category Priority 3 (P3) includes calls that are for time-critical transports.

Service Planning uses data from the Computer Aided Dispatch (CAD) system and the CAD Operational Dashboard to support management reporting relating to ambulance activity and performance across NSW. Incidents are used to measure demand as they best reflect the number of people who require ambulance services.

Demand projection methodology

Service Planning has developed a methodology to project emergency incident numbers that considers current age-specific incident volume, current and forecast population, and historical incident growth rates. This method uses the projected growth rates by response area and then for each zone, scales these rates according to observed utilisation rate increases. This allows for growth to be attributed differently to response areas within the zone based on population projections and ensures that utilisation rate growth is included in the projections.

Factors that drive demand

Being able to estimate demand requires an understanding of the key drivers for emergency ambulance transport and out-of-hospital care. In summary they include:

- population ageing and population growth
- disease patterns including chronic disease
- access to alternative pathways
- social support and alternative transport options
- pricing factors
- community expectations
- health awareness/ literacy
- the level of care provided at the scene potentially eliminating the need for transport
- access to telephone advice and referrals as an alternative to an emergency response
- changes in medical practice such as increased hospital throughputs and rates of treatment

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Identification of current gaps in coverage

NSW Ambulance uses several data sources to identify areas in regional NSW that are a priority for a new ambulance station or volunteer service. This process analyses NSW Ambulance data including historical number and distribution of emergency incidents combined with travel times, distance from closest ambulance station and population forecasts. This data is weighted and combined to provide a prioritised list of towns that would provide the greatest improvement to response times and ambulance coverage. These data sources are also used to establish the appropriate size for the new service by estimating the catchment size in terms of both current and future demand.

Service Planning Tools

Demand Coverage Model (DCM)

The Demand Coverage Model (DCM) is a model designed by Operational Research in Health (ORH) to support the planning of ambulance cover in regional NSW. The model provides information on the 'coverage profile' through different reports. Various drivers can be loaded into the model, such as population data or incident data, against which to assess the coverage. The model also has the facility to suggest locations where ambulance cover could be introduced to improve coverage. The DCM model is used to analyse infrastructure requirements across New South Wales.

AmbSim

ORH has developed a sophisticated ambulance simulation model, AmbSim, for modelling the operations of ambulance services. AmbSim is loaded with geography, demand, resources, and other operational parameters. When the model is run, incidents are simulated based on these inputs, and AmbSim dispatches vehicles to respond based on the incident location, the availability, and location of NSW Ambulance resources and dispatch protocols.

The AmbSim tool is used for the modelling and simulation of rosters, deployment patterns, changes in locations of stations and hospitals and variations in relevant factors such as response times and Transfer of Care (TOC) to inform decision making for achieving optimal response performance in Sydney, Central Coast, Inner Hunter, and Northern Illawarra.

id.placemaker

id.placemaker is a visual map-based web application that incorporates Small Area Forecast information (SAFi) population projections and census data. It is customised to show how the population and its demand for ambulance services now and into the future.

Population data

The Department of Planning and Environment provides NSW Ambulance with the most up to date population projections. NSW Ambulance uses this and other data streams to monitor factors such as demographics, population growth, travel times, utilisation rates of existing services, and planned future development when planning for future services.

Summary

NSW Ambulance has an existing service planning methodology in place to ensure the clinical needs of communities are met. The need and priority for additional or enhanced ambulance services is continuously monitored and considers the following criteria:

- Volume of demand in town and surrounding area
- Distance from any ambulance service

- Current response times to emergency incidents
- Modelled improvement in response times if an ambulance station was commissioned
- Assessment of capacity and condition of closest ambulance station
- Capacity of NSW Ambulance volunteer service to provide a response

NSW Ambulance conducts regular analysis of all locations within NSW to identify areas of growing demand for the prioritisation of resources. This includes using best practice modelling software that maps Triple Zero (000) calls to determine the most suitable location for emergency care, including examining current response areas and modelling potential station locations to meet community need.