

Reducing the risk of Healthcare Worker infection and service interruption by rostering for 'Isolated Teams' during the COVID-19 Pandemic

Dr Simon Arnold, Queensland Health

ABSTRACT

Exposure of Healthcare Workers to COVID-19 may be unknown as many patients are asymptomatic. This carries the risk of infection and necessary quarantine both which deplete the healthcare workforce at a time of need. Restructuring the workforce into 'Isolated Teams' can limit the number of Healthcare Workers exposed and should be a key consideration of pandemic management.

INTRODUCTION

Effective workforce planning during a pandemic has the dual aims of protecting healthcare workers (HCW) and preserving the capacity for service provision in the face of increased demand and/or workforce depletion. This requires a considered approach to workforce structuring aiming to minimise service disruption caused by illness and quarantine. This paper provides an example of 'Isolated Teams' rostering aiming to manage risk of infection and service interruption to an Australian secondary obstetrics and gynaecology unit.

The broad aim of pandemic management is to keep demand for medical services within the capacity of service providers. This provides the twofold objectives of minimising community infection and, maximising the capacity of the workforce. A key component to maintaining an effective workforce is anticipating the possibility of staff exposure and limiting resultant infection and impact on service provision.

At the time of writing, the spread of COVID-19 is being managed primarily by social distancing. New infections in Australia are now the result of community spread. Community spread has resulted in over 3,500 Australian HCW infected and withdrawn from the workforce.

COVID-19 has proven difficult to manage as infected patients may not be identified given initial latency or subclinical course. Undiagnosed patients pose the risk of multiple HCW being exposed. The potential for multiple HCW exposure has implications for the individual as well as workforce implications caused by infection or quarantine. Historically Singapore reports HCW comprised 41% of 238 cases of Severe Acute Respiratory Syndrome (SARS). Australia has already seen workforce depletion resulting from single COVID exposure, a Perth hospital was required to isolate 19 HCW. As a result of the COVID-19 pandemic, Italy has suffered a workforce shortage resulting in pressure for exposed staff to return to work early after exposure.

THE 'ISOLATED TEAMS MODEL'

Caboolture Hospital O&G Department has restructured their workforce of fourteen doctors (Consultants or Registrars) into six 'Isolated Teams' of two. A team consists of one senior doctor and one training registrar and are enabled to work together without any physical interaction with other teams. Two registrars cover night shift.



Risk given usual rostering



Risk given Isolated Teams

Division of the available workforce into multiple small teams and, keeping these teams physically isolated from each other mitigates risk of mass exposure given an undiagnosed or prodromal COVID-19 patient. This has greatly changed the daily routine; each team meets separately for electronic handover each morning. Ideally each team will avoid any physical proximity with other teams, continuing duties and communicating by phone as needed, this includes the tearoom. Outpatient clinics including antenatal clinic are conducted by phone where possible.

CONTINGENCY PLANNING

'Isolated teams rostering allows for workforce modelling given reduced available staff. The following chart provides an example of contingency planning.

Further contingencies have been developed for split teams (one team member infected), Night registrar unable to work, call to cover other clinical areas and return to work of doctor who has been infected.

Minimising impact of exposure is essential to pandemic planning as the medical workforce is often working at capacity to provide healthcare without any additional demands. Cancellation of elective surgery and 'non-essential' clinics may buffer the medical workforce against increasing demand in some areas of medicine. This is not possible for specialties such as Obstetrics where need for patient care (antenatal clinics and delivery) remains constant regardless of other events.

Functional Teams	Priorities	Allocation	Notes
6	Business as usual Clinical duties are not impacted by staff shortages	7 Single team per weekday to cover Birth Suite 7 4th team covers weekends 7 Resident or non-clinical Reg covers ANDAS / EPAU	Potential for stand down or work from home
5	Approximating business as usual Clinical duties are not impacted by staff shortages	7 4th Team covers duties of off team 7 Weekends covered by remaining 5 teams 7 Resident or non-clinical Reg covers ANDAS / EPAU	Weekend cover to continue in teams as per consultant on call roster. To avoid team splitting by fatigue; Sunday cannot be covered by the team on call Monday.
4	Reduced Clinical Capability Birth Suite Antenatal Clinic Emergency Gynae Clinic ANDAS / EPAU / EM OT	7 3 Teams cover 2 Birth Suite days/ week 7 Resident or non-clinical Reg covers ANDAS / EPAU	For efficient use of staff only one clinic should run at a time (ie Antenatal or Em Gynae. If hopping to 4 days per week there will be only 3 teams in the hospital most days. Potential for fatigue is high.
3	Clinical Capability Significantly Reduced Birth Suite Antenatal Clinic Emergency Gynae Clinic	7 Each team cycles through: Birth Suite Antenatal Em Gynae / ANDAS / EPAU / Em OT	Potential for consultant Fatigue is Extreme; more senior registrars onto night shift. This should prompt cancellation of anything non-essential
2	Critical Services only Birth Suite & ANC / EPAU	7 Teams alternate between Birth Suite and Clinic	Senior Registrars on night shift.

ALTERNATIVE STRATEGIES

An alternative strategy for pandemic staffing employs two teams; one dedicated for known COVID-19 patients 'hot team' and a team for normal patients 'cold team'. This effectively limits exposure to known infectious patients however does not mitigate the 'cold team' exposure risk for undiagnosed patients or staff. The current rate of asymptomatic COVID-19 infection is unknown but estimated at 30% making unrecognised cold team exposure a certainty as community infection progresses.

Although research is currently ongoing no vaccine exists. Without a vaccine or effective medical treatment and in the absence of herd immunity COVID-19 remains a persistent threat to the community and Healthcare system. Every opportunity should be taken to minimise HCW exposure including the structure of the workforce.

LITERATURE CITATIONS

- *Chang D, Huiwen X, Andre R et al. Protecting health-care workers from subclinical coronavirus infection Online Publication February 13, 2020 DOI [https://doi.org/10.1016/S2213-2600\(20\)30066-7](https://doi.org/10.1016/S2213-2600(20)30066-7)
- *Gan WH, Lim JW, Koh D. Preventing intra-hospital infection and transmission of COVID-19 in healthcare workers
- *Laschon E, Carmody J, Gubana B. Coronavirus shuts down Joondalup Health Campus maternity ward as doctors call to halt interstate travel
- * Online Publication Updated 17 Mar 2020, 11:48pm
- *On the front lines of coronavirus: the Italian response to covid-19
- *BMJ 2020; 368 doi: <https://doi.org/10.1136/bmj.m1065> (Published 16 March 2020) Cite this as: BMJ 2020;368:m1065
- *Queensland Health Interim Guidelines - infection prevention and control guidelines for the management of COVID-19 in healthcare settings Version 1.10: 27 March 2020 QHealth, accessed April 2020
- *Nishiura H, Kobayashi T, Suzuki A et al. Estimation of the asymptomatic ratio of novel coronavirus infections (COVID-19) International Journal of Infectious Diseases Online publication: 13/2/20 Accessed April 2020

