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Feature Article

Title of article: COVID-19 as a valuable learning opportunity
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Summary of article: Most medical students do not receive much public health exposure during their medical education. This article reflects on a public health placement undertaken during COVID-19.

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Learning points:
1. While COVID-19 led to the interruption of medical education and presented various challenges, medical students can make the most of the pandemic, including public health experience.
2. Skills in areas like evidence-based medicine, communication and rapport building, interprofessional learning and multidisciplinary collaboration are valuable and transferable.

3. Medical graduates are expected to advocate for patient health and society as a whole; as such, it is worth pursuing a public health placement at some point during their medical education.

Abstract
Most medical students do not receive much public health exposure during their medical education, either in the form of theoretical teaching or practical placement experiences. At the University of Adelaide, students can elect to undertake a public health elective during winter school in addition to limited lectures with a public health focus, but there was not much opportunity for such placements prior to COVID-19. Following the interruption of clinical placements during the peak of the pandemic in South Australia, a modified academic structure saw the introduction of a twelve-week public health placement at the Department for Health and Wellbeing for final-year medical students. This article reflects on the author's immersive experience at the Department for Health and Wellbeing during the COVID-19 pandemic and includes a brief description of the department's services along with how it fits into the broader COVID-19 response. Public health placements can impact medical graduates' understanding and passion for health and society and their role as health advocates. Both of these are included in the Australian Medical Council's Graduate Outcomes statement. Public health placements are therefore worthwhile pursuing.

Introduction

I had the opportunity of completing a twelve-week placement at the Department for Health and Wellbeing (SA Health) during the COVID-19 pandemic. SA Health represents the health portfolio of services and agencies responsible to the Minister for Health and Wellbeing. It comprises of multiple functional units that enable smooth delivery of its services. The wider political and legislative systems need to be included in describing how SA Health and its various functional units fit into the broader COVID-19 response.

South Australia as a member state of the Commonwealth

An intergovernmental forum known as the National Cabinet was established to coordinate the national COVID-19 response. Comprised of the Prime Minister and the premiers and chief ministers, the National Cabinet's decision-making is advised by advisory groups including the Australian Health Protection Principal Committee (AHPPC), the peak decision-making committee for public health emergency management and disease control in Australia. AHPPC is comprised of the Chief Health Officers (and their equivalent roles) of all states and territories and is chaired by the Australian Chief Medical Officer. COVID-19 declarations and determinations made under the Commonwealth's *Biosecurity Act 2015* provide legal support to the decisions made on public health bases.

South Australia as a jurisdiction

Several legislations underpin South Australia's COVID-19 responses, including the *Emergency Management Act 2004* and the *South Australian Public Health Act 2011*. The declaration of a Major Emergency under the *Emergency Management Act 2004* gives the State Coordinator and Authorised Officers emergency powers to undertake necessary activities to address the crisis. The State Coordinator is advised by the State Controller from an agency with the knowledge, expertise, and resources to undertake a leadership role, and is supported by other governmental agencies. Together, these form the State Emergency Management Committee, which reports to the Emergency Management Council, a committee of the Cabinet chaired by the Premier. SA Health is the control agency during the COVID-19 pandemic [1].

In addition, a Transition Committee was also set up to guide the lifting of COVID-19 restrictions, with consideration given to the socioeconomic status of the state. It is comprised of the chief executives of the Department of the Premier and Cabinet, Department for Health and Wellbeing, Department of Treasury and Finance, and Department for Trade and Investment, in addition to the Chief Public Health Officer (State Controller Health) and Commissioner of the South Australian Police (State Coordinator during Major Emergency).

Department for Health and Wellbeing as control agency

The Chief Public Health Officer is responsible for issues in public health and communicable diseases. It is one of the six existing chief officers within SA Health that supports and advises in key areas of clinical, public health, scientific, or allied health services [2]. Other chief officers include the Chief Medical Officer, Chief Nurse and Midwifery Officer, Chief Pharmacist, Chief Psychiatrist, and the Chief Allied and Scientific Health Advisor.

During the COVID-19 pandemic, four deputy Chief Public Health Officers were also appointed to support the Chief Public Health Officer. They each lead a workstream with its specific focus, but all work together to ensure a comprehensive approach to the COVID-19 responses. In brief, these workstreams had a focus on public health responses, clinical

systems and high acuity care, primary care and out-of-hospital services, and whole-of-government responses.

Reflection

Placement activities at the Department for Health and Wellbeing

I was fortunate to work with the Chief Public Health Officer and her deputies in these various workstreams, as well as personnel from various functional units including the Communicable Diseases Control Branch, Health Protection and Licensing Services, Office of the Chief Medical Officer, and the Office of the Chief Pharmacist. My placement activities varied from day to day and changed over time, reflecting the rapid developments of the COVID-19 situation and the department's response accordingly. Some of these activities included preparing for case interview and contact tracing, synthesising published literature and grey literature to inform and guide the COVID-19 responses, and to provide industry-specific advice. Other activities included working with Human Biosecurity Officers on risk mitigation plans for people and organisations intending to enter Aboriginal and Torres Straits Islander communities, attending State Emergency Centre briefings, participating in various projects and discussions for policymaking, and attending stakeholder consultations and/or site visits.

Shadowing the Chief Public Health Officer gave me a behind-the-scenes look into the reasoning behind public health decisions and the considerations taken into account. Similar to the learning process of developing clinical acumen, this was especially interesting where there was a lack of conclusive evidence, when such evidence needed to be extrapolated, and when different conclusions were drawn based on the same evidence. It was also fulfilling to observe effective rapport-building and communication skills, especially in instances where there were conflicting stakeholder and public health interests.

Another memorable experience during my placement at SA Health was reviewing the Australian Football League (AFL)'s COVID-19 protocol and the Adelaide Oval's reopening strategy, as well as attending two rounds of AFL matches to observe these mega events from a public health perspective [3]. One of these matches, dubbed "a showdown like no other", represented the first sporting event in Australia to allow spectator attendance since the interruption of sport leagues following COVID-19 [4].

Multidisciplinary and systems approach within SA Health

I quickly realised during my placement that SA Health is equipped with many professions both within and beyond the health sector, each of whom contributes to an effective system that enables SA Health to carry out its service deliveries and COVID-19 response.

As an example, I was able to participate in the pilot of COVID-19 swab collection aimed at opportunistically testing patients with COVID-19 symptoms who present to pharmacies [5]. This rationale was informed by a regular population health survey which identified a significant percentage of symptomatic people not presenting for COVID-19 testing [6]. While the rationale was simple and straightforward, the launch of this pilot required input from various subject matter experts. Experts in project delivery and implementation science provided tools and frameworks to ensure timeliness of project delivery and adequate considerations of various aspects of the project. The Office of the Chief Pharmacist was instrumental in liaising with individual pharmacies and regulatory bodies including the Pharmacy Guild, Pharmacy Board of Australia, and the Pharmacy Society of Australia. Meanwhile, the general practitioner liaison, as well as media and communications were involved in communicating with other representative bodies and the general public. Legal and insurance services were also consulted in the planning of this pilot.

Other professions who had significant input into the COVID-19 response included data analytics and digital solutions, crucial in facilitating various dashboards and reporting; procurement and supply chain management and infectious diseases specialists, who ensured ongoing adequate personal protective equipment for clinical use; intergovernmental relations who played an important role in communicating with the Commonwealth and other agencies; and health translation and health economic experts who provided data and guidance on the COVID-19 response.

Interagency collaboration in the COVID-19 response

This multidisciplinary collaboration in the COVID-19 response also extends to other governmental agencies. For instance, this is represented through the interagency collaboration that is the mandatory quarantine of all international arrivals at a designated facility. Each repatriation flight requires significant planning and organisation of logistics, with input from several agencies during each phase. A manuscript outlining the planning and preparedness response for these operations is currently in preparation [7]. As part of the whole-of-government workstream, I was also able to work with personnel from other governmental agencies, including the Department for Education on school-related matters in the context of COVID-19, the Department of the Premier and Cabinet on issues affecting Aboriginal and Torres Strait Islander communities, South Australian Police, and Department for Transport and Infrastructure.

In working with these different agencies, I was able to identify preconceptions and assumptions in my understanding of how these agencies work, as well as how different public health actions affect the agencies and the community. South Australian Police, for example, has a strong emphasis on taking an educational approach to their enforcement of various COVID-19 restrictions, as opposed to a punitive approach. It is my understanding that such an approach is important in keeping the community on board with the COVID-19 response. Successful collaboration among these different agencies was enabled by a shared understanding of the public health situation in South Australia, the need for ongoing measures, and the impact of various restrictions on all agencies, as well as the inter-organisational linkages which enabled nurturing of relationships among personnel from various agencies [8].

An understanding of how each discipline or agency fits into the broader picture and the governance structure provides a clarity in effective planning and delivery of services, especially where a systems approach is required. It also provides insight into how conflicting priorities could be resolved. I am confident that my learnings and reflections in working with personnel from various agencies will enable me to work in multidisciplinary teams, both within and outside the healthcare setting. Spending time in SA Health also gave me an appreciation of the underlying systems and structures that allow effective delivery of health services, which I believe will help me consider the big picture and navigate the best course of action when advocating for the health and wellbeing of my patients, whether as individuals, communities or as a population.

Surveillance and monitoring of COVID-19 and other diseases

A key learning point during my placement is that there is loss of information at each stage of surveillance. Such loss of information can occur when symptomatic patients do not present for testing or when health practitioners decide that testing is unnecessary. Additionally, in the context of certain surveillance systems, positive testing may not always lead to notification.

Consequently, positive notifications to the health department only represent a certain percentage of the population who indeed have the disease.

While largely accepted for many conditions, there is a need for this loss of information to be minimised in the context of COVID-19. This was precisely the rationale behind opportunistic testing of symptomatic people who do not present for testing but present to pharmacies for over-the-counter medications or health advice. Other methods that have been employed in Australia to reduce such loss of information include encouraging healthcare personnel to request a COVID-19 test for any patients who have symptoms, public health messaging through different forms including social media, and hardship payments to encourage testing and isolation following testing. Additional testing sites that were set up in South Australia in response to COVID-19, including the ones deployed to the South Australian - Victorian borders, aim to improve access and to reduce barriers to testing by geographical areas. These initiatives were beneficial in consolidating my previous learning of these public health principles through an elective [9].

An understanding of surveillance systems and the approaches to increasing the effectiveness of such systems in different contexts is essential in making evidence-based decisions to protect and promote the health of populations. Future surveillance of communicable diseases could include modelling based on travel pattern and mobility data, instead of current assumptions of a homogenous, well-mixed population; although there may be ethical and/or legal concerns in the acquisition of such baseline data.

Early learnings in the factors contributing to health, illness, and success of interventions
COVID-19 is a novel pandemic with many unknowns. As an example, while most severe cases were attributed to advanced age or pre-existing co-morbidities, some patients with severe outcomes had none of these risk factors, including a South Australian who acquired the disease on a cruise ship and required a prolonged stay in the intensive care unit [10]. His wife, who was on the same cruise, did not acquire the infection.

Yet amidst these unknowns, some trends have been noted both in Australia and overseas. Early in the pandemic, most COVID-19 cases in South Australia were reported in returning overseas travellers, many of whom resided in suburbs considered to be of higher socioeconomic status [11]. This was in contrast to diseases such as Hepatitis C, which disproportionately affect marginalised populations [12].

However, the ‘second wave’ in Victoria was seen to predominantly affect people from culturally and linguistically diverse communities, many of whom worked in casual positions at multiple work locations and could not afford to self-isolate following testing. This also resulted in difficulties in case interviewing, where interpreters were introduced to the already lengthy phone interview process. Further issues arose in contact tracing, where confirmed cases of COVID-19 reportedly refused to name their close contacts, given their concerns that anyone named during this process would similarly need to quarantine and would suffer a loss of income as a result.

Patient-centred approach in public health interventions and health delivery
An initial consultation between SA Health and representatives of the culturally and linguistically diverse population identified several misconceptions among these communities, including that testing would incur a cost. One community leader identified that there was a prevalent conspiracy theory around COVID-19 testing being used to also test for other

diseases such as HIV. Evidence that such psychological barriers have implications on testing rates has also been previously documented [13]. Some community leaders also identified the wide-ranging sources of information within their community, as well as some illiteracy among community members, highlighting the areas that require further effort and support by SA Health.

The setting up of Aboriginal and Torres Strait Islanders as *cordon sanitaires* under the *Biosecurity Act 2015* also had unintended consequences, as the well-intentioned legislation to protect communities from COVID-19 inevitably introduced strict requirements for people entering and leaving the communities. Especially in communities with geographical proximity to a major town, members of these communities routinely leave the "Designated Areas" to access essential supplies or services or rely on members outside of the communities to bring in such supplies or services. As a result of these unintended consequences, all Aboriginal and Torres Strait Islander communities that opted in as a Designated Area under this Act subsequently withdrew from such arrangement.

These experiences led me to reflect on the necessity for a patient-centred approach of healthcare and for a partnership with consumers in providing health services. While the delivery of health services has moved away from the traditional paternalistic approach, with some specialties even engaging consumers in the research process and empowering them to participate in scientific meetings [14], healthcare providers need to be mindful of how preconceptions and assumptions can subconsciously affect their course of action. Open communication seeking to understand the priorities of individual patients or communities will allow for any treatment or intervention to be oriented towards the patient or the community's desired outcome.

Conclusion

A perceived dilemma between public health and clinical practice is that the focus of public health is predominantly on a community or the population, although the benefits of any public health intervention ultimately impact on individual patients, whereas clinical practice is predominantly focused on the patient in front of the clinician, although positive outcomes through individual consults ultimately affect population health. Reflecting on my placement has encouraged me to consider a dual career in clinical practice and public health. I will keep in mind the need for individual patients' health and wellbeing as well as that for communities and populations to be balanced. There is a need for exposure to public health among medical students, whether in the form of teaching or experiential placements.

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References

[1] S.A. Health. SA government and SA health emergency management overview [Internet]. 2018 [cited 2020 Jul 23]. Available from: https://www.sahealth.sa.gov.au/wps/wcm/connect/40d51c52-5c24-4cdc-a67b-822ba26be823/SA+Govt+and+SA+Health+-+Emergency+Management+Overview+October+2018_final....pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE-40d51c52-5c24-4cdc-a67b-822ba26be823-n5ijRCC

[2] S.A. Health. Our chief officers. 2020 [cited 2020 Aug 20]. Available from: https://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/about+us/about+sa+health/our+chief+officers

[3] Chan JEZ, Lee A, Lease C, Spurrier N. Recommencement of sport leagues with spectators at the Adelaide Oval during the COVID-19 pandemic: planning, experience and impact of a globally unprecedented approach. Manuscript submitted for publication. 2020.

[4] Walsh L, Hough A, Russell C, Sunday Mail. After 293 days on the bench, Showdown 48 brings crowds back to Adelaide Oval – get your poster now [Internet]! 2020 [cited 2020 Jun 14]. Available from: https://www.adelaidenow.com.au/news/south-australia/after-293-days-on-the-bench-showdown-48-brings-crowds-back-to-adelaide-oval-get-your-poster-now/news-story/8ade99bb70835045ce9813523f24674b?fbclid=IwAR2uE8JhzNGWjRbjhr5kE1bIQHPRr1i1PNmMNL8r4ipd1or2V0S1lavBE2o

[5] Smith M. COVID-19 tests at chemists trialled to boost number of South Australians getting checked. The Advertiser; 2020 [cited 2020 Jul 23]. Available from: https://www.adelaidenow.com.au/coronavirus/covid19-tests-at-chemists-trialled-to-boost-number-of-south-australians-getting-checked/news-story/c6f206cf93906764f54b440942e82800

[6] Hough A, Sulda D. Sick snub COVID-19 testing pleas as SA Health warns of mounting complacency [Internet]. The Advertiser; 2020 [cited 2020 Jul 23]. Available from: https://www.adelaidenow.com.au/coronavirus/sick-snub-covid19-testing-pleas-as-sa-health-warns-of- mounting-complacency/news-story/9b2dbeb749dff27897a31380f4aed568

[7] Meena S, Chan JEZ, Phan TV, Kirkpatrick E, Hall R, McGowen P, et al. Repatriation operation in South Australia during the COVID-19 pandemic: planning and preparedness. Manusript in preparation. 2020.

[8] Bistaraki A, McKeown E, Kyratsis Y. Leading interagency planning and collaboration in mass gatherings: public health and safety in the 2012 London Olympics. Public Health. 2019 Jan;166:19-24. doi:10.1016/j.puhe.2018.09.031

[9] Mahmood MA. Health Systems of the World: Access and Equity: University of Adelaide; 2016.

[10] Hough A. Ruby Princess passenger Paul Faraguna won COVID battle doctors thought him doomed to lose [Internet]. The Advertiser; 2020 [cited 2020 Jul 23]. Available from: https://www.adelaidenow.com.au/coronavirus/ruby-princess-passenger-paul-faraguna-won-covid-battle-doctors-thought-him-doomed-to-lose/news-story/619c19d9b1705d81f480dedd16a487dc

[11] S.A. Health. COVID-19 dashboard [Internet]. 2020. Available from: https://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/conditions/infectious+diseases/covid+2019/covid-19+dashboard

[12] Edmunds BL, Miller ER, Tsourtos G. The distribution and socioeconomic burden of Hepatitis C virus in South Australia: a cross-sectional study 2010-2016. BMC Public Health. 2019 May 8;19(1):527. doi:10.1186/s12889-019-6847-5

[13] Ford CL, Wallace SP, Newman PA, Lee SJ, Cunningham WE. Belief in AIDS-related conspiracy theories and mistrust in the government: relationship with HIV testing among at-risk older adults. Gerontologist. 2013 Dec;53(6):973-84. doi:10.1093/geront/gns192
[14] Duncanson E, Dansie K, Gutman T, Tong A, Howell M, Jesudason S, et al. 'Knowledge is power': a framework for partnering with consumers in developing and delivering a scientific meeting in nephrology. Nephrology (Carlton). 2020;25(5):379-83. doi: 10.1111/nep.13570