INQUIRY INTO HEALTH OUTCOMES AND ACCESS TO HEALTH AND HOSPITAL SERVICES IN RURAL, REGIONAL AND REMOTE NEW SOUTH WALES

Organisation: InteliCare

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Submission

Inquiry into Health Outcomes and Access to Health and Hospital Services in Rural, Regional and Remote New South Wales

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Recommendations

1. **NSW Government should work with the Commonwealth to fill the gap in respect to better use of technology for hospital discharges.**

2. **NSW Government should implement a small-scale trial of up to 100 units in a regional, rural and remote location in NSW.**

Introduction

3. Health outcomes and access to care and hospital services should not be determined by location. Equity demands that all New South Wales (NSW) citizens, irrespective of where they live, have access to the same standards of care and support. Increasing technology will play a part in delivering equitable, efficient, and economic outcomes and services thereby permitting limited human health resources to address critical care issues. Equally important technology will enable early interventions before situations develop into medical or health crises.

4. Australian company, InteliCare Holdings Limited has commercialised a smart Internet of Things (IoT) and Artificial Intelligence (AI) predictive monitoring system for use in the disability, aged care and the broader health sectors. It is a well-established tool.

5. Implementing InteliCare's predictive technology and in-home monitoring across the hospitals, services and Local Health Boards in rural, regional, and remote NSW will assist to improve and address some of the pressing issues already raised with the members of the Legislative Council Portfolio Committee #2. These include the confusion about care provided to seniors in local health facilities, people living with a disability either in a residential aged care facility or living independently, managing preventable early hospital admissions and re-admissions and ensuring patients can remain in their homes safely for as long as possible It could also help resort community confidence in care provided outside metropolitan areas of NSW.

> *"In 2019, I had InteliLiving® installed for my nan, Lois, over in Perth. Although nan was a little bit worried about the installation of sensors, she quickly found that it didn't effect her day-to-day at all, and they were actually very subtle, so she wasn't too concerned.*
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> *We found as a family it mentally helped us coordinate our care, even for me here in Sydney. I could check in and make sure she was all fine and helped us take action if there was ever a need.*
>
> *It made a really big difference for our family."*
>
> *— GWS Giant, Matt de Boer*

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6. In examining the issues associated with the provision of health services and accessing to health and hospital services in rural, regional, and remote NSW the members of the Legislative Council Portfolio Committee #2 cannot ignore the issue of the provision of aged care. Older residents of rural, regional and remote NSW are significant users of hospital services either through their local hospital or Multi-Purpose Services (MPS)

    Program facility, which also provide residential aged care. The longer older residents can stay in their home the better for all concerned, the resident, their family, the community, and the health service. As Mrs Campbell of Warren told the Committee on 18 May 2021 in Wellington:

    "Frail, elderly residents also need to remain within their community with their extended families." (Hansard, 18 May 2021, p.25)

7. Portfolio Committee #2 members have also heard concerning evidence about the use of MPS facilities in rural, regional, and remote NSW.

    Dr IANNUZZI: "… Are they hospitals or are they MPSs? At times the doctors and the nurses are expected to perform to the level of a high-level hospital—someone comes in with a major trauma. At other times they are told, "You are just a nursing home, and you are not going to be staffed and resourced properly." (Hansard, 18 May 2021, p.5)

8. The aim of the MPS Program to provide integrated health and aged care services to regional and remote communities in areas that cannot support both a separate aged care home and hospital is commendable. The objective to allow senior Australians to stay in their own communities as they get older, close to their families and community ties is the right one.

9. In 2019 a review examined whether delivering aged care services in regional and remote areas through MPS was an effective model[1]. The final report contained several recommendations for the program. The Government response to the review was released in April 2020. The Commonwealth accepted Recommendation 6 which called for a funding review to support the "…*delivery of flexible, high quality home care and home-based palliative care and to reducing avoidable residential aged care*." The Government also accepted Recommendation 11 and the call for private provision and consumer choice in HCP.

10. InteliCare commends the aims and objectives of the MPS Program. We believe it is an equitable and worthwhile program. However, it must be improved. Two pressing priorities are addressing failure to deliver services and consumer choice in the provision of aged care services to older Australians living in regional and remote areas who wish to remain at home for as long as possible.

11. The proven InteliCare technology is ideally suited to assist in meeting the primary objective of the MPS Program to provide "*innovative, flexible and integrated health and aged care*" to Australians living in regional, rural, and remote communities. The technology is an innovative and flexible solution that supports the strong preference for ageing in the local community outside the local MPS facility.

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[1] Australian Government (2020) "*Australian Government Response – MPS Review recommendations*"
https://www.health.gov.au/resources/publications/aged-care-in-mps-response-to-the-australian-government-terms-of-reference

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12. Additionally, making the InteliCare technology available to seniors and other patients across rural, regional and remote NSW will also deliver efficiencies and savings that can be allocated to other pressing needs in MPS Program facilities, Local Health Boards and NSW Health that have been presented to the Committee by witnesses.

13. Further, funding MPS to implement InteliCare Technology will ensure that Governments' can successfully implement Recommendation 6 of the MPS Program Review[2].

Managing early hospital admission by instigating in-home monitoring

14. Early intervention using inhouse monitoring of seniors living in rural, regional, and remote NSW, before they experience a medical or health crisis, not only ensures better individual health outcomes, but also delivers positive financial benefits for health budgets due to early care delaying need for hospital admission. Additionally, the senior remains within their community for longer, rather than having to leave to be hospitalised.

15. Research shows that hospitalisation accelerates a senior patient's functional decline, reduces their available healthcare options, and associated costs escalate.

16. Furthermore, the InteliCare solution can help to reduce cases of hospital discharge including from trauma such as a fall, chronic disease and mental health. Examples include:

- Cardio-pulmonary disease: the InteliCare solution detects worsening condition due to fluid on the lungs;

- Cardio-vascular and circulation disease: detects deterioration through reduced mobility;

- Infection: especially UTI but includes other worsening infections characterised by loss of appetite, trouble sleeping, vomiting/diarrhoea and reduced mobility; and,

- Dementia: via monitoring of wandering, especially night-time.

Managing Falls to Avoid Unacceptable Results

Falls are a major risk for NSW seniors, with serious implications for their long-term health and independence. The number of falls is increasing in frequency. Each day, an average of six falls results in an injury requiring hospital admission in the Western Local Health District. A fall resulting in patient injury is likely to increase the length of stay for the patient and increase the overall treatment cost.[3]

A recent study found that a senior lying on the floor after a fall for in excess of an hour is strongly associated with serious injuries, admission to hospital, and subsequent moves into long- term care[4] – all more expensive outcomes. The

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[2] Australian Government (2020): 2

[3] HealthStats NSW "Fall-related injury hospitalisations" accessed at http://www.healthstats.nsw.gov.au/Indicator/inj_falloldhos

[4] Fleming, Jane and Braye, Carol (2008) "Inability to get up after falling, subsequent time on floor, and summoning help: prospective cohort study in people over 90" *BMJ* 2008;337:a2227 accessed at https://www.bmj.com/content/337/bmj.a2227

same study questioned the value of client activated pendants or alarms which were considered irrelevant and impractical.[5] InteliCare's technology has been demonstrated to reduce this risk:

"One of the key features of the system is to identify when a resident has fallen and to provide assistance quicker. During our pilot, we had the unfortunate experience of one of our residents having a fall: however with the InteliCare system providing close details of the activity within in the house - and in this case lack of activity; one of our staff was able to carry out a welfare check and attend to the fallen resident within 30 minutes! A huge improvement over what residents previously experienced". (Swan Care)

17.   The InteliCare technology enables Australian seniors and people with a disability to live at home securely and independently for longer using industry-leading smart sensors.

Using Technology to reduce unplanned Hospital Readmissions

18.   All Australian governments, including the NSW Government committed in 2017 under the National Health Reform Agreement Addendum, to undertake reforms focused on avoidable hospital readmissions.

19.   Nationally, one in seven hospital discharges result in an unplanned readmission of the patient within 28 days[6]. Professor Debora Picone, Chief Executive Officer of the Australian Commission on Safety and Quality in Health Care, has stated that "*there is no question that readmission rates here (Australia) are too high. There are very big variations across regions and particularly between states*"[7]. The cost of avoidable hospital readmissions is estimated to exceed more than $1.5 billion across Australia.[8]

20.   Avoidable hospital readmissions are distressing and possibly harmful for patients, families, and carers. Unplanned readmissions for senior patients may result in complications, higher use of hospital and community healthcare resources, and faster functional decline.[9] Furthermore, unplanned readmission is a challenge for healthy ageing in place. A significant proportion of unplanned hospital readmissions are avoidable and preventable.

21.   Reducing avoidable hospital readmissions can include tackling issues such as the rate of complications and other adverse events arising during the admission, as well as improving discharge planning, care coordination and the provision of health and other support services in the community after discharge. Interventions that begin in hospital and continue after discharge are the most effective.[10]

22.   The InteliCare technology can play a key role in supporting earlier and better managed discharges of senior patients back into their home and the community by the treating hospital and medical team. This is

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[5] Fleming, Jane and Braye, Carol (2008) "Inability to get up after falling, subsequent time on floor, and summoning help: prospective cohort study in people over 90" *BMJ* 2008;337:a2227 accessed at https://www.bmj.com/content/337/bmj.a2227
[6] Considine, Julie et al (2019) "Factors associated with unplanned readmissions in a major Australian health service" *Australian Health Review*, 2019, 43: 8
[7] Swannell, Cate (2013) *"*Readmission rates too high" *InSight* accessed at https://insightplus.mja.com.au/2013/2/readmission-rates-too-high/
[8] Considine, Julie et al (2019) "Factors associated with unplanned readmissions in a major Australian health service" *Australian Health Review*, 2019, 43: 2
[9] Shebeshi, Dinberu S. et al (2020) "Unplanned Readmission within 28 Days of Hospital Discharge in a Longitudinal Population-Based Cohort of Older Australian Women" *Int. J. Environ. Res. Public Health*, 17: 3136; doi:10.3390/ijerph17093136
[10] Australian Commission on Safety and Quality in Health Care. (2019) *Avoidable Hospital Readmissions: Report on Australian and International indicators, their use and the efficacy of interventions to reduce readmissions.* (Sydney: ACSQHC)

especially important if the patient's home is considerable distance from the treating hospital as in typical in rural and remote NSW. The Committee heard evidence of two-hour ambulance transport times.

23.   Social isolation, comorbidities and malnutrition have been shown in research to be risk factors for readmission. Monitoring and predictive solutions like InteliCare's can also help carers manage and address such risks. Indigenous status is also a strong predictor.[11]

About InteliCare

24.   InteliCare Holdings Limited (ACN 622 484 397) is an Australian technology company that has commercialised a smart Internet of Things (IoT) and Artificial Intelligence (AI) predictive monitoring system for use in the aged care and health sectors.

25.   The company was founded in 2016 following receipt of a $500k "Royalty for Regions" grant through the Western Australian (WA) Government's Department of Health, with a remit to develop remote monitoring technology to support people at risk (the elderly and disabled), to live independently. InteliCare developed the system over three years, with 25,000+ hours of development, including multiple in-residence trials.

> ### InteliCare Partners with NSW Universities and Government
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> InteliCare, Sydney University and Macquarie University were awarded a $100,000 by the NSW Smart Sensing Network on 25 May 2021, to further develop the company's machine learning capability. The aim is to further develop algorithms to predict and prevent events likely to impact on seniors' quality of life such as chronic disease or mental health deterioration. The NSW Smart Sensing Network is an NSW Government program supporting collaboration between industry and academia.

26.   It subsequently commercialised this technology and delivered systems to the WA Department of Health, WA Department of Communities, a range of aged care organisations (both home care and residential living) and independent customers.

27.   The unique predictive capability based of AI learning, allows seniors to age in place as they desire, by avoiding unnecessarily early admissions to residential aged age.

28.   Many seniors across Australia including in regional areas use the InteliCare technology in their homes.

How clever technology can be part of the solution

29.   The InteliCare system is a leading and proven next generation technology. Using the best and brightest technology and latest AI based predictive monitoring system enables patients to stay in their own home longer.

30.   There are no cameras involved, protecting an individual's privacy and avoiding the sense of being 'spied on'. Furthermore, the individual involved decides who has access to this information, maintaining their feelings of independence and privacy.

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[11] Sharma Y, Miller M, Kaambwa B, et al (2018) Factors influencing early and late readmissions in Australian hospitalised patients and investigating role of admission nutrition status as a predictor of hospital readmissions: a cohort study. *BMJ Open,*8:e022246. doi:10.1136/bmjopen-2018-022246

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31. This advanced technology supplants user-activated nurse call services and wearables that are not well adopted by the elderly.

32. The InteliCare system identifies deviations from patterns of normal behaviour to predict negative events e.g. falls or reduced nutrition, which if unchecked would usually result in medical intervention and/or a hospital admission. This early intervention has been shown to reduce or prevent hospitalisation, or re-admission to hospital. The predictive benefits of InteliCare technology delivers better outcomes for the patient, their loved ones, and the health care system.

33. The industry leading AI uses data from non-invasive mon-wearable sensors (IoT data - movement, power, door, temperature etc.) to detect changes in an individual's behaviour patterns and provide early warning for family and carers. This is achieved through a smart device application or online portal. The system can be self-installed easily, or installation provided as a service, and is fully transportable and can be used in a range of environments.

34. Once installed, the system monitors the individual's domestic behaviour (e.g. sleep, normal household routine, bathroom use and regularity of meal preparation) over a few days. AI continuously detects behaviour trends and sends either a daily "all okay" message, or abnormal event alerts through mobile "push" and text notifications to primary care givers, care service providers and family, with real time feedback. For commercial applications it utilises a cloud-based dashboard to enable care providers to triage multiple residents according to deterioration, based on each resident's data trends.

35. The AI learning capability of the monitoring system is predictive allowing early intervention which delivers better health outcomes more efficiently and cost effectively. An overview can be found here: https://www.youtube.com/watch?v=Mv1g0oAvDuk&t=14s

36. InteliCare recently undertook a cost-benefit analysis. The set-up cost for the product is $1,299 for the InteliCare solution and an annual subscription fee of $960. This delivers an annualised cost for the InteliCare solution of $1,393. Given the costs of alternative services, the potential savings for a year in which an individual is able to stay out of residential care are $77,521.75 per person and the potential saving for keeping people on the Commonwealth Home Support Program as opposed to Home Care Package is $16,909. This implies an ROI of 12.1:1, which means InteliCare is efficient if it only delivers this benefit in 8.2% of cases for a single year.

Addressing Regional and Remote Market Failure

37. In some regional and remote areas there is "market failure" in terms of service providers being available to deliver on the Home Care Package (HCP) component to older Australians wishing to remain in their home and community. As the 2019 Review found:

    "…In many cases, the MPS is the provider of last resort in community aged care where external providers of Home Care Packages (HCP) and Community Home Support Programme (CHSP) are deterred by poor economies of scale and long travel times from regional hubs."[12]

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[12] Woods, Michael; Edwards, Karen; Naghsh Nejad, Maryam; Haywood, Phil and Wise, Sarah (2019) "*Aged care in MPS: Response to the Australian Government Terms of Reference*" (Sydney, CHERE): 11

38. As a result, MPS-based community nurses play a central role in identifying needs, integrating services, and easing transition between homebased and residential care[13]. This can be a financial struggle – the review noting that *"two thirds of the MPS did not use their funding to support aged care for people living in their own home."[14]*

39. The InteliCare technology would enable MPS to support regional and remote Australian seniors, including in NSW, wishing to live at home independently, by using industry-leading smart sensors and machine learning. The technology would make community nurses more efficient and the program more cost effective. The predictive nature of the technology will also enhance standards of care while permitting clients to remain in their homes, in their communities, for longer.

Providing Choice

40. Older Australians living in regional and remote areas, who are relying upon an MPS HCP or CHSP aged care service have no choice of provider, as *"…in many cases, the MPS is the provider of last resort"*.[15] The Federal

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13 Woods et al, 2019: 39
14 Woods et al, 2019: 10
15 Woods et al, 2019: 11

Government has agreed in response to the review, to investigate private provision and choice as part of the creation of a single unified system for care of the elderly in their home.

41.   Additionally, the desired services may not be available. "*One issue repeatedly discussed in case study visits to small or isolated communities was the misalignment between the community-based aged care providers that were advertised on My Aged Care as servicing that town, and the actual provision of care by those providers to eligible and approved individuals in the town.*"

42.   Using the InteliCare technology would allow the more targeted and efficient use of HCP packages while providing an equitable option for care those whose more limited needs are currently not being met. For example, follow on remote monitoring of older patients in their own home, will increase the benefits of recently implemented telehealth consultation program. This will reduce reliance on in-home checks and focus the limited number of HCP packages on preventative healthcare, where either the technology identifies a need, or a need has been identified by other health care professionals. The provision of targeted care to those in immediate and greatest need will lead to a productivity increase for MPS.

43.   Supporting the roll out of InteliCare will also extend the geographic reach of existing rural and regional based private or external HCP and CHSP providers, by removing the need to always travel long distances to service all patients – currently uneconomic, rather than those who require personal visits for care reasons.

44.   Implementing the InteliCare solution by MPS will provide choice to the elderly in remote, rural and regional Australia by allowing them the option to age-in-place rather than being forced to relocate simply to access support services. Additionally, their urban-based families will have the ability to become part of the care solution.

Implementation Case Study – Rural and Regional Western Australia

"*My Stepmother Bessema lives in an independent living unit in the rural town of Cunderdin (WA). If it weren't for InteliLiving my Stepmother, who is 96 years old and blind, would have to move into an aged care home. I'm in Perth, and I know that the InteliLiving app will tell me if I have to check in on my Stepmother. It gives us both great peace of mind knowing she can live in the country town she loves, and I don't have to worry about her.*" **Julie Douglas**

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