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Title:
Clinical Obesity Services in Public Hospitals in Australia: a position statement based on expert consensus

Date:
2018-06-01

Citation:
Atlantis, E., Kormas, N., Samaras, K., Fahey, P., Sumithran, P., Glastras, S., Wittert, G., Fusco, K., Bishay, R., Markovic, T., Ding, L., Williams, K., Caterson, I., Chikani, V., Dugdale, P. & Dixon, J. (2018). Clinical Obesity Services in Public Hospitals in Australia: a position statement based on expert consensus. Clinical Obesity, 8 (3), pp.203-210. https://doi.org/10.1111/cob.12249.

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What is already known about this subject?

- Approximately one million Australians with clinically severe obesity (defined as body mass index [BMI] e40 kg/m^2 or BMI e35 kg/m^2 with at least one complication) could benefit from specialist obesity services (i.e. specialist hospital-based multidisciplinary team ([MDT] services for the management of weight and obesity-related complications).
- Due to complex healthcare issues, patients suitable for specialist obesity services are unlikely to be adequately managed in primary care alone.
- Specialist obesity services including non-surgical MDT care, weight loss pharmacotherapies, and bariatric surgery have been shown to effectively improve a range of health outcomes in patients with clinically severe obesity.

What this study adds?

- This is the first description of specialist obesity services in public hospitals in Australia, and the first national expert consensus position statement on such services.
- The composition of services varied substantially between hospitals. Patient access to services and treatments was limited by strict entry criteria (e.g. BMI 40 kg/m^2 or higher with specific complication/s), prolonged wait times, geographical location (major cities only), as well as out-of-pocket costs.
- There was consensus on the need for significant improvements in: a) staff and physical infrastructure resources required for providing effective evidence based treatments for clinically severe obesity; b) access to services (e.g. establishing new

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1111/cob.12249

services in areas of need and expanding the capacity of existing services including education and training resources); and c) targeted research funding for improving specialist obesity services.

Abstract

We aimed to describe the current state of specialist obesity services for adults with clinically severe obesity in public hospitals in Australia, and to analyse the gap in resources based on expert consensus. We conducted two surveys to collect information about current and required specialist obesity services and resources using open-ended questionnaires. Organisational level data was sought from clinician expert representatives of specialist obesity services across Australia in 2017. Fifteen of 16 representatives of current services in New South Wales (n=8), Queensland (n=1), Victoria (n=2), South Australia (n=3), and the Australian Capital Territory (n=1) provided data. The composition of services varied substantially between hospitals, and patient access to services and effective treatments were limited by strict entry criteria (e.g. body mass index [BMI] 40 kg/m^2 or higher with specific complication/s), prolonged wait times, geographical location (major cities only), and out-of-pocket costs. Of these services, 47% had a multidisciplinary team (MDT), 53% had an exercise physiologist/physiotherapist, 53% had a bariatric surgeon, and 33% had pharmacotherapy resources. Key gaps included staffing components of the MDT (psychologist, exercise physiologist/physiotherapist) and access to publicly funded weight loss pharmacotherapy and bariatric surgery. There was consensus on the need for significant

improvements in staff, physical infrastructure, access to services, education/training in obesity medicine, and targeted research funding. Based on the small number of existing, often under-resourced specialist obesity services that are located only in a few major cities, the vast majority of Australians with clinically severe obesity cannot access the specialist evidence based treatments needed.

Introduction

The international epidemic of severe obesity (defined using a body mass index [BMI] of ≥35 kg/m^2) requires immediate intervention with effective management strategies for appropriate obesity service access and delivery for people suffering from this disease and its complications (1, 2). Primary care frequently provides first line services for obesity and general practitioners (GPs) play an important role in identifying individuals with obesity and implementing strategies to promote weight loss and/or prevent weight regain as well as treating associated complications (3-5). Patients with severe obesity often have multiple health conditions, and consequently, complex health needs that cannot be met within the constraints of most primary care settings (6). Their health needs may be more appropriately addressed in specialised obesity services with a multidisciplinary team (MDT) approach that can provide more intensive interventions where appropriate (i.e. specialist hospital-based obesity support services including bariatric surgery) (3-5). Specialist obesity services

including non-surgical MDT care, weight loss pharmacotherapies, and bariatric surgery have been shown to effectively improve a range of health outcomes in patients with clinically severe obesity (7-10).

There are approximately one million adults in Australia with 'clinically severe obesity' (defined using a BMI e40 kg/m^2 or e35 kg/m^2 with at least one complication), potentially eligible for bariatric surgery (11), whom would be candidates for referral to specialist obesity services but few have access to the range of recommended treatments and services needed (3, 4). Patients referred for specialist obesity services often have been unable to maintain prior weight loss and have complex care needs requiring the evaluation and treatment of multiple conditions. These include metabolic diseases such as type 2 diabetes, cardiopulmonary diseases (e.g. hypertension, ischaemic heart disease or severe heart failure, obstructive sleep apnoea, obesity hypoventilation syndrome), severe joint disease limiting mobility, as well as depression and anxiety (5). Given that the high and rising prevalence of severe obesity is likely to persist (1) the provision of specialist obesity services to address the health needs of people suffering with clinically severe obesity will challenge health systems in countries like Australia, where there is publicly-funded universal health care. Despite most Australians relying on the public health system, the majority (approximately 88%) of bariatric surgery is performed in private hospitals (12).

While comprehensive recommendations on evidence based treatments are available (3, 4), there is limited guidance on the organisational structure and resource composition of specialist obesity services. Few are available from the United Kingdom (13, 14), which as with Australia, has publicly-funded universal health care (though with reportedly far greater fiscal constraints). Locally, a report containing recommendations on the composition and operation of specialist obesity services was prepared by the Greater Metropolitan Clinical Taskforce for the New South Wales Ministry of Health in 2009, and these have been updated in 2017 (unpublished reports). There is no description to date of obesity services in public hospitals in Australia. The collaborators in the Clinical Obesity Services in Public Hospitals (COSiPH) project sought to describe the current state of public specialist obesity services for adults in Australia, and to develop recommendations based on consensus of expert opinion.

A gap analysis and formulation of recommendations was undertaken by a working group with representatives from COSiPH, an expert chair (JD), and stakeholders including the Australian and New Zealand Obesity Society (ANZOS) and the Australian and New Zealand Metabolic and Obesity Surgery Society (ANZMOSS). Membership of the working group is shown in Appendix 1.

The aims of the COSiPH project were to:

1. Describe the current state of public specialist obesity services for adults in Australia
2. Develop recommendations to address the current resource gaps and future needs based on consensus of expert opinion

Material and Methods

We conducted two surveys to collect information about current and required specialist obesity services and resources. Organisational level data was sought from clinician expert representatives of specialist obesity services across Australia in 2017, identified by exhaustive internet searches (i.e. approximately one full day searching Google using a range of keywords) and through professional referrals from the core group of COSiPH representatives, as with snowball sampling (or chain referral). Representatives completed two rounds of open-ended questionnaires designed to solicit opinions about the current (Survey 1, Appendix 2) and required (Survey 2, Appendix 3) resources of existing specialist obesity services. After the first round, representatives discussed the preliminary results and the need for a position statement at the 2017 Australian & New Zealand Obesity Society and Obesity Surgery Society of Australia & New Zealand and Asia Oceania Association for the Study of Obesity (ANZOS-OSSANZ-AOCO) Joint Scientific Meeting, and exchanged views and commentary via email regularly thereafter. Members of the COSiPH working group were asked to disclose any conflicts of interest information before deliberations. We sought and obtained confirmation from the Research and Ethics Office, South Western Sydney Local Health District, New South Wales that ethics review of the project was not required given that respondents would be providing organisational level data.

In both rounds, representatives were provided tabulated data summarised for the entire group, asked to check the accuracy and completeness of their responses, and had the opportunity to revise their judgments, consistent with features of the Delphi technique (15). Responses to the questions on '…current list of clinic staff…?' (question 2, Survey 1) and 'minimum clinic staff?' (question 1, Survey 2) were coded into 7 staff categories such as physician, bariatric surgeon, nurse, etc. Responses to the question on '…key features of the obesity services…' (question 3, Survey 1) or 'minimum services…?' (question 2, Survey 2) were classified into 4 key services: bariatric surgery; MDT; weight loss pharmacotherapy; and lifestyle/diet intervention). Responses to the question on 'minimum infrastructure…?' (question 3, Survey 2) were classified into 5 categories such as adequate room/space, adequate chair size, etc. Data extraction and synthesis were conducted by one author (EA). Responses were coded 0 (for 'absent') and 1 (for 'present') for each component resource. Quantitative characteristics of each service (such as year of commencement, treatment period, number of clinics per week) were recorded as reported. Responses to questions 9-11 were not classified into categories.

We describe this population of obesity service providers using percentages for categorical variables and number above specified thresholds for the numeric variables. To assist gap analysis, a graph was created to plot the percentage of each staff and service type currently available against the percentage of times they were identified as a required part of the service. While the reference lines on this graph are arbitrary, they aid discussion of gaps in services. As a rough indication of the adequacy of current services, we compared the total number of

resource categories available against the total number of resource categories required. The linear correspondence between available and required resource categories was summarised using Pearson's correlation coefficient. Analyses were conducted using SPSS software.

Results

Sixteen public hospital obesity services in major cities were identified. Fifteen of the 16 representatives contacted agreed to participate in the COSiPH project and provided survey data. In the first round (Survey 1), 15 representatives from New South Wales (n=8), Queensland (n=1), Victoria (n=2), South Australia (n=3), and the Australian Capital Territory (n=1) provided data. This geographical area covers approximately 86% of the Australian population (16). In the hospitals represented, the obesity services were established between 1983 and 2017 (with three new services established since 2014). Patient treatment periods were: 2 years or more (n=11), 6 -12 months (n=2), up to 6 months (n=1), and unclear (n=1). The number of visits to services per week varied widely across sites, but typically, there were two or fewer. Only 7 of 15 services reported currently managing more than 100 patients and most (n=14) reported managing less than 10 new patients weekly. Many services had more than 300 patients on a waitlist (n=6) resulting in protracted waiting times that ranged from months to years. Specific referral/intake criteria varied across the sites, but most reported features of 'clinically severe obesity' defined using specific BMI thresholds with a range of obesity-related complications. Three services were specifically for patients with severe obesity and type 2 diabetes, fatty liver or obesity hypoventilation syndrome. In most services,

patients paid for very low energy diet (VLED) meal replacements (typically AU$2-3 per meal replacement) and weight loss pharmacotherapy. Discharge criteria included: failure to lose weight/attend scheduled clinics (n=3); referral back to GP in agreement with the patient (n=5); achieved successful weight-loss goals (n=2); declined surgery (n=2); and none specified (n=3).

Table 1 presents the current and required specialist obesity management clinic staff/service composition reported by the representatives. Currently, 80% or more of services had a physician, a dietitian, access to bariatric surgery (a fixed number either onsite or affiliated), or lifestyle/diet intervention (including very-low-energy diet) resources. Only 60% of services had nursing, psychology or clerical staff resources. Multidisciplinary team care or exercise physiologist/physiotherapist resources were available in only about half of the services. Access to weight loss pharmacotherapies was provided by only one third of the services.

In the second round, 13 representatives from metropolitan areas in New South Wales (n=7), Queensland (n=1), Victoria (n=2), and South Australia (n=3) provided data for Survey 2. Nearly all (92-100%) of the respondents agreed that effective obesity services require a physician, a bariatric surgeon, dietitian and psychology resources, and the majority (77%) recommended access to lifestyle interventions, pharmacotherapy and co-located exercise physiologist resources. Service providers reported having access to an average of 7.2 of the 11 staff and services categories but felt that 8.8 on average of these resources were required.

This gap was largely in clinic staff composition (psychologist and exercise physiologist or physiotherapist), access to an MDT, weight loss pharmacotherapy and bariatric surgery (Figure 1). No linear relation was found (r= 0.04) between the two surveys for summed scores. The lack of correlation indicates that the number of resources available to the services does not correspond to the number of resources required by the services. Most of the experts agreed that there was a lack of adequate physical infrastructure.

Table 1: Summary of current (Survey 1 data) and required (Survey 2 data) resources of specialist obesity services in Australian public hospitals

Responses by category	Current (%) (N=15)	Recommended (%) (N=13)
Staff		
Physician	93%	100%
Bariatric surgeon	53%	77%
Clerical/administration	60%	62%
Nurse	73%	46%
Dietitian	87%	100%
Psychologist	67%	92%
Exercise physiologist or physiotherapist	53%	77%
Services		
Bariatric surgery	87%	92%
Multidisciplinary team	47%	77%
Weight loss pharmacotherapy	33%	77%
Lifestyle/diet interventions	80%	77%
Infrastructure		
Adequate rooms/space		85%
Adequate size chairs		92%
Adequate anthropometric measuring devices		62%
Adequate physical access (doorways, parking, ramps)		69%
Education/telehealth facilities		31%
Other		
Research resources		31%
Rapid access to allied and specialist services		46%

Notes: Surveys used are available online (see Supporting Information, Table S1, Table S2)

<<Figure 1>>

Discussion

We present the first description of publicly funded specialist obesity services in Australia. Based on the results of Survey 1, access to specialist obesity services is limited to only a very small fraction of people potentially eligible for specialist healthcare for clinically severe obesity (11). For instance, we estimate that less than 2,000 patients have access to either specialist obesity services (Survey 1 data) or publicly-funded bariatric surgery (12) each year in Australia. Even if there was a 10-fold increase in services tomorrow, it would take more than 25 years to treat at least one million people potentially eligible for specialist obesity services including bariatric surgery, assuming the prevalence of clinically severe obesity remains unchanged during this period. The prolonged waiting lists reported for most services are undoubtedly causing distress among patients, especially those waiting for publicly-funded bariatric surgery (17). Timely and equitable access is of concern. Very strict entry criteria (e.g. BMI 40 kg/m^2 or higher with complication/s, representing only 45% of the adult population with clinically severe obesity (11)) are often used by services to determine intake eligibility.

Individuals with socio-economic disadvantage are least likely to afford the out-of-pocket expenses for some treatments. This is particularly important given the growing use of both

weight loss pharmacotherapies (18) and bariatric surgery (19) in Australia. From the data collected, there is no clear policy justification (other than cost) for the apparent differences in the allocation of resources including weight loss pharmacotherapies and bariatric surgery in the Australian public health system. Furthermore, geographical location is a major obstacle for many patients, as approximately 35% of people with clinically severe obesity in Australia live in remote areas (11) and regular travel to specialist obesity services in major cities is usually prohibitive. Residential distance has been shown to be negatively associated with attendance and completion at specialist obesity services (20).

The COSiPH project has identified substantial heterogeneity in the composition of the obesity services, despite broad consensus from representatives regarding the resources that should be available to specialist obesity services. There was unanimous agreement that MDT care provided by physicians, surgeons, allied health including dietitians, exercise physiologists/physiotherapists and psychologists would improve the quality of services. This composition of a specialist obesity service is almost identical to that currently recommended for commissioning similar specialist obesity services in the UK (13, 14). The gaps in clinic staff and services between what is currently available and expert recommendations are related to limited budgets, resources, clinical capacity, and access to effective therapies. The experts within the COSiPH working group, representative of existing publicly-funded specialist obesity services, agree that a national consensus regarding best practice for Clinical Obesity Services can be reached, but implementation will require a broad commitment across the health system from important stakeholders including the Federal Department of Health and

the Departments' of Health in each state. The current national approach to assessing and managing clinically severe obesity would surely be unacceptable if it were applied to other complex chronic health conditions such as cancer, type 2 diabetes, and cardiopulmonary diseases.

Despite the 1,000,000 adults with clinically severe obesity in Australia, very limited services are available and there is substantial variability in the structure, resourcing and capacity of current specialist obesity services. Current services have arisen on an ad-hoc basis, driven by dedicated groups of practitioners in conjunction with individual health services. Establishing new services is extremely challenging because of the fiscal constraints imposed by most local health districts. To date, a consistent national strategic plan for current services and how they link with other services, including to primary care has not been implemented. Whilst the important role of GPs in this regard is acknowledged, effective obesity management in primary care requires further development and investment/training (21, 22). Attempts have been made to rationalise bariatric surgical services in some states, but this has often limited access to care without broader rationalisation of the service structure or function (23-25).

Currently funded services, many of which are associated with major teaching hospitals, have an important role in leading and shaping the future of Australia's health system. Of course, a major expansion in national clinical capacity will require education, training and hands on experience with skilled health practitioners (26), and a substantial increase in allied health

professional workforce resources (27). Clinical pathways need to be developed and assessed, common standards of care established, and criteria for escalating therapy evaluated. An effective team care approach is required for opportunities to determine efficiencies in managing chronic obesity-related conditions, including group patient education (28), self-management support, shared visits to health care practitioners, team approaches in decision making, and other principles of the Chronic Care Model (29). Additive ways of interacting with health professionals and other relevant stakeholders for providing effective specialist obesity service including 'interdisciplinary' and 'transdisciplinary' approaches should be explored (30). Evidence comparing the effectiveness of physician led MDT with interdisciplinary and transdisciplinary team models of care for improving health outcomes in patients with clinically severe obesity is lacking. Targeted research funding for testing and evaluating such initiatives is required from local health district, state and federal government grant agencies.

Draft key recommendations

1. Staff: should include a physician led co-located MDT containing specialist dietitian, clinical psychologist, exercise physiologist or physiotherapist, bariatric surgeon, specialist nurse and administration personnel, as is feasible for the site.
2. Physical infrastructure: should include group rooms, adequately sized plinths/waiting room chairs/clinical rooms, drop off zones and/or easy access parking, use of ambulatory services and telehealth service delivery.

3. Access: there should be a national and state-wide framework for incrementally scaling up specialist obesity services in public hospitals.
4. Education and training: there should be routine training of medical students and other healthcare professionals, including allied health professionals and primary care physicians, in specialist obesity management. This can include, but is not limited to, formal instruction using lectures and courses, as well as clinical exposure within services themselves. This is important for optimising the effectiveness, scalability and sustainability of specialist obesity services in Australia.
5. Electronic database: each service should create an electronic database for systematically capturing minimum and standardised clinic data for the ongoing monitoring and evaluation of their service, and to promote collaboration *between* services such as information sharing for quality assurance as well as data linkage for future research purposes.
6. Research funding: there should be targeted calls for research on exploring ways of improving specialist obesity services using new and existing interventions from local health districts, state and federal grant agencies.

We acknowledge several study limitations and potential sources of bias. Most of the clinician expert representatives whom provided responses to the surveys (13 of 15) are physicians whom also formed the majority of the COSiPH working group membership and this position statement authorship. No specialist obesity service was identified in Western Australia; this was unexpected given that it had the highest rate (1.9 per 10,000 population) of publicly-

funded weight loss surgery episodes of care (i.e. hospitalisation admissions that include 1 or more procedures) in 2014-15 (12). While there are several public hospitals providing bariatric surgery only, we believe that our sampling procedure identified all of the existing comprehensive specialist obesity services in public hospitals across Australia. Study participation was limited to specialist obesity services predominately for adults. Thus the abovementioned draft key recommendations may not be universally endorsed by other relevant stakeholders. Further, the quality of the survey data which formed in part the basis for the position statement is unknown. For instance, the two open-ended questionnaires (Surveys 1 and 2) developed for this study were not tested for reliability and validity, and the accuracy and completeness of the responses were not repeatedly and systematically followed up with the respondents. Despite these limitations, the authors believe that these draft key recommendations and position statement are a necessary first step for scaling up specialist obesity services in Australia.

In summary, this is the first description of specialist obesity services in public hospitals in Australia, and the first national expert consensus position statement on such services. The composition of services varied substantially between hospitals. Patient access to services and treatments were limited by strict entry criteria, prolonged wait times, geographical location, as well as out-of-pocket costs. There was consensus on the need for significant improvements in: a) staff and physical infrastructure resources to provide the recommended evidence based treatments; b) access to services (e.g. establishing new services in areas of need and expanding the capacity of existing services including education and training resources); and

c) research funding for improving specialist obesity services in Australia. Based on the small number of existing, often under-resourced specialist obesity services that are located only in a few major cities, the vast majority of Australians with clinically severe obesity cannot access the specialist evidence based treatments needed.

Table and Figure legends

Table 1: Summary of current (Survey 1 data) and required (Survey 2 data) resources of specialist obesity services in Australian public hospitals

Figure 1: Visual analysis of gaps between current and required resources of specialist obesity services in Australian public hospitals

Conflict of Interest Statement

EA received honoraria from Lilly Diabetes Australia in 2013. IC is the President of the World Obesity Federation. He has performed clinical trials of obesity treatment and prevention some of which have been funded by government, but others by the pharmaceutical industry. Current trials are funded by the NHMRC, NovoNordisk, Pfizer, BMS, Australian Eggs and SFI. He has given talks for NovoNordisk, Servier Laboratories, Ache and Pfizer in the last 3 years. JD has research support and grants from NHMRC, and has consulted for Bariatric Advantage, Nestle Health Science, I-Nova, Medtronics, Apollo Endosurgery, Novo Nordisk, and Ethicon Endo Surgery. None of these companies had any role in this project. GW has research grants from the NH&MRC, ARC, NHF and Diabetes Australia. He is Editor in Chief of Obesity Research and Clinical Practice, and International Advisor for Clinical Key (Elsevier). He is independent Chair of the Weight Management Council of Australia. He has

had research support from Weight Watchers, Bayer, and Eli Lilly and received honoraria from Novo Nordisk, I-Nova, Merck-Serono, Abbvie, Astra Zeneca, Roche, Bayer and Besins. PS has received payment from Novo Nordisk for a talk unrelated to this project. TM has received research support and performed clinical trials of obesity treatment and prevention, some of which have been funded by government, but others by the pharmaceutical industry. Current trials are funded by the NHMRC, NovoNordisk, Eli Lilly, Pfizer, Zafgen, Australian Eggs and SFI. She has given talks for NovoNordisk and Astra Zeneca. She has consulted for Australian Eggs, Nestle Health Science and NovoNordisk. None for NK, KS, KW, SG, PF, KF, RB, LD, VC, and PD.

Acknowledgments

EA conceived and led the project. NK, KS, PS, SG, GW, KF, RB, TM, LD, KW, VC, and PD provided the data. PF analysed the data. All authors were involved in writing the paper and had final approval of the submitted and published versions. We are grateful to all the COSiPH working group members (listed in Appendix 1), some of whom did not meet authorship criteria, for contributing data and general advice regarding this project.

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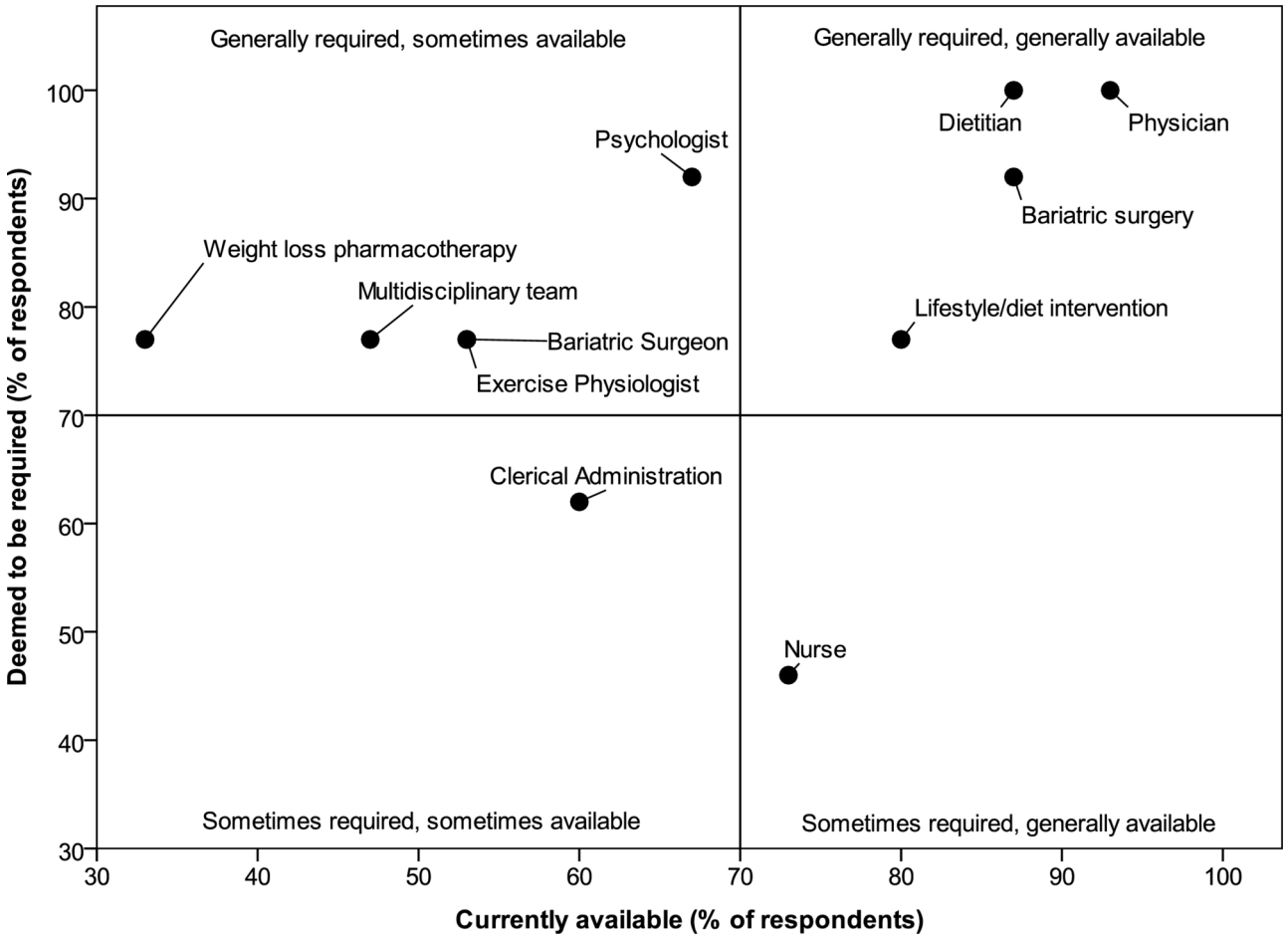

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Keywords: Obesity, Multiple Chronic Conditions, Tertiary Healthcare, Secondary Care, Hospital Outpatient Clinics, Specialist Weight Management, Weight Loss

Running title: Expert consensus on specialist obesity services

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ICMJE Form for Disclosure of Potential Conflicts of Interest

Instructions

The purpose of this form is to provide readers of your manuscript with information about your other interests that could influence how they receive and understand your work. The form is designed to be completed electronically and stored electronically. It contains programming that allows appropriate data display. Each author should submit a separate form and is responsible for the accuracy and completeness of the submitted information. The form is in four parts.

1. Identifying information.

Enter your full name. If you are NOT the corresponding author please check the box "no" and a space to enter the name of the corresponding author in the space that appears. Provide the requested manuscript information. Double-check the manuscript number and enter it.

2. The work under consideration for publication.

This section asks for information about the work that you have submitted for publication. The time frame for this reporting is that of the work itself, from the initial conception and planning to the present. The requested information is about resources that you received, either directly or indirectly (via your institution), to enable you to complete the work. Checking "No" means that you did the work without receiving any financial support from any third party -- that is, the work was supported by funds from the same institution that pays your salary and that institution did not receive third-party funds with which to pay you. If you or your institution received funds from a third party to support the work, such as a government granting agency, charitable foundation or commercial sponsor, check "Yes". Then complete the appropriate boxes to indicate the type of support and whether the payment went to you, or to your institution, or both.

3. Relevant financial activities outside the submitted work.

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Report all sources of revenue paid (or promised to be paid) directly to you or your institution on your behalf over the 36 months prior to submission of the work. This should include all monies from sources with relevance to the submitted work, not just monies from the entity that sponsored the research. Please note that your interactions with the work's sponsor that are outside the submitted work should also be listed here. If there is any question, it is usually better to disclose a relationship than not to do so.

For grants you have received for work outside the submitted work, you should disclose support ONLY from entities that could be perceived to be affected financially by the published work, such as drug companies, or foundations supported by entities that could be perceived to have a financial stake in the outcome. Public funding sources, such as government agencies, charitable foundations or academic institutions, need not be disclosed. For example, if a government agency sponsored a study in which you have been involved and drugs were provided by a pharmaceutical company, you need only list the pharmaceutical company.

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1. Given Name (First Name): PAUL
2. Surname (Last Name): DUGDALE
3. Effective Date (07-August-2008): 28.3.18

4. Are you the corresponding author? ☐ Yes ☒ No

5. Manuscript Title: Clinical Obesity Services in Public Hospitals (COSiPH) in Australia: A position statement based on expert consensus

6. Manuscript Identifying Number (if you know it): COB-18-ORE-0007.R1

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						ADD
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						ADD
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						ADD
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						ADD
11. Stock/stock options	☒	☐	☐			×
						ADD
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						ADD
13. Other (err on the side of full disclosure)	☒	☐	☐			×
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