STRATEGIC ROADMAP
FOR OPHTHALMOLOGY:

MODELS FOR FUTURE EYECARE IN SINGAPORE

EXECUTIVE SUMMARY

College of Ophthalmologists
Academy of Medicine, Singapore

CONTENT

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EXECUTIVE SUMMARY

According to the Singapore population white paper[1] published in January 2013, Singapore's total population could range between 6.5 and 6.9 million by 2030. The number of citizens aged 65 and above will also triple to 900,000 by 2030.

Along with aging population, ophthalmology is undergoing significant transformation. We are seeing more patients with aging conditions and chronic diseases, with a significant increase in demand for eye care in the country. Concurrently, with increasing cost, it has been suggested that a large part of our eye care can be coordinated in the community setting, perhaps by non-ophthalmologists (e.g. primary care setting by optometrists, non-specialists). It is also unclear if training more specialist ophthalmologists practicing in specialist eye clinics, is the only way forward to address the increasing eye care needs of Singapore.

With this scenario in mind, the College of Ophthalmologists, Academy of Medicine Singapore (AMS) is preparing a "Strategic Roadmap for Ophthalmology" that will guide how eye care will be provided to Singaporeans in the future. To kick start this initiative, a report on the overall vision for eye care in Singapore and recommendations on efforts to achieve this vision, has been drafted and will be submitted ultimately, to both the Academy and the Ministry of Health Singapore, for information and sharing.

In line with this report, a survey has been conducted to identify the current challenges of ophthalmology and those by the year 2030 as well as the possible changes in current model(s) of eye care to help ease the challenges. Respondents were also encouraged to provide feedback on proposed improvements and initiatives. Responses were collated from three groups of respondents; ophthalmologists, general practitioners (GPs) and polyclinics, as well as chairmen of medical boards (CMBs) of the various institutions, to achieve a wider representation of the local eye health care landscape.

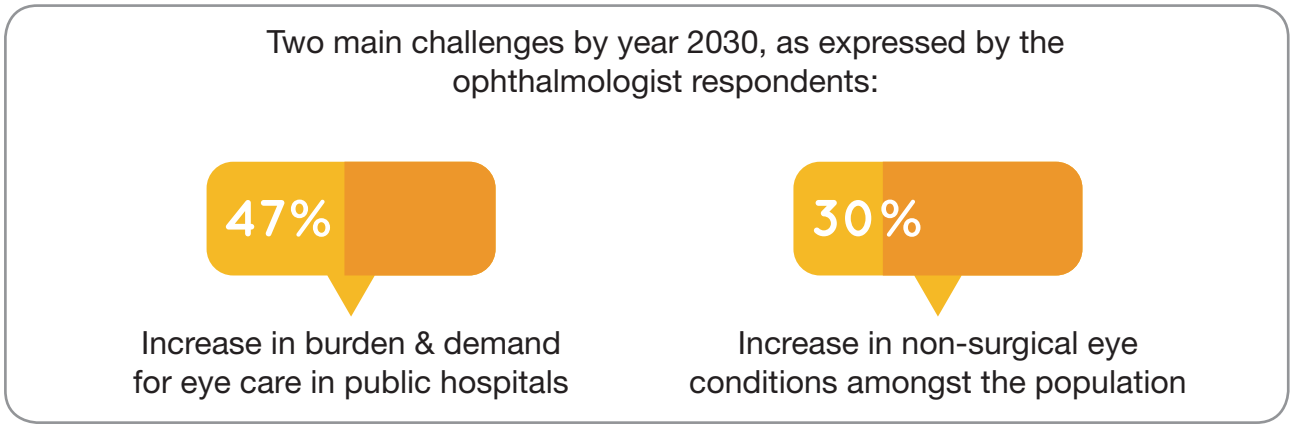
This report contains the summarized responses from respondents on current and future challenges, proposed improvements to the current model(s) of eye care, and other initiatives that can be undertaken to meet the future needs in both the public and private sectors.

[1] *A Sustainable Population For A Dynamic Singapore. A Population White Paper.* (pp. 1-41. Rep.). (2013). Singapore: National Population And Talent Division.

SUMMARISED KEY POINTS FROM SURVEY RESPONDENTS

1. Below are the key feedback received from the ophthalmologists and the CMBs respondents:

   a. **Increasing workload in hospitals, especially non-surgical load:**
   Two of the main challenges by the year 2030[2], as identified by the ophthalmologist respondents, include the increase in burden and demand for eye care in public hospitals (47%) as well as increase in non-surgical eye conditions amongst the population (30%).



   b. **Insufficient public sector ophthalmologists to cope with demand in eye care in future:**
   Almost 68%[3] of ophthalmologist respondents and 5 CMBs[4] (from the 7 who responded) felt that there will be a shortage of ophthalmologists in the public sector, by 2030. As such, the current model of care is not sustainable. This sentiment is shared by the 5 CMB respondents[5] (from the 7 who responded).

   c. **Sufficient private sector ophthalmologists currently and in the future:**
   89%[6] of ophthalmologist respondents opined that there will not be a shortage of ophthalmologists in the private sector. All 7 CMB respondents[7] agreed with this too. One ophthalmologist suggested that there is a gross mismatch in supply of and demand for services between the private and public sectors. As such, efforts or initiatives have to be carried out to achieve and strike a manpower balance, at each department level and nationwide. This can be done through relocation of resources, i.e. private/public sector collaboration as well as utilization of private sector expertise and resources to bridge this gap.

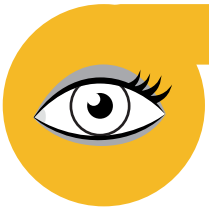
[2] Refer to Annex A
[3] Refer to Annex B
[4] Refer to Annex C
[5] Refer to Annex D
[6] Refer to Annex E
[7] Refer to Annex F

PROPOSED
3 MODELS OF CARE

2. In anticipation of the above future scenario, the Workgroup has proposed 3 types of models of care, with the objective of identifying the best possible viable solution to alleviate the burden of eye care in public hospitals.

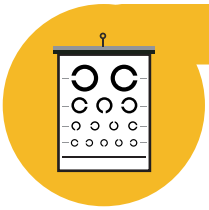
   In addition to feedback received from ophthalmologists, these 3 models of care have been developed by referring to a few selected models of care from countries such as the United States and Australia (whereby allied healthcare professionals work alongside ophthalmologists to manage primary eye care), Germany (where patients are co-managed by medical ophthalmologists and surgeons, as not all ophthalmologists perform surgeries) as well as Japan, where all eye care are provided by ophthalmologists.

   a. **The definitions of the 3 models of care proposed to ease patient load are:**



i. **Ophthalmologist-centric model of care:**

This model proposed that the patient load remain with the ophthalmologists, and the number of residents being trained each year is increased while developing the necessary infrastructure to keep up with the demand. Upon exiting residency, these residents can become either surgical or medical ophthalmologists, depending on their aptitude and interest.

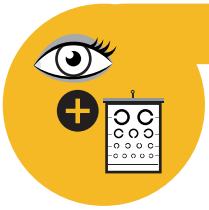


ii. **Non-ophthalmologist centric model of care:**

This model of care proposes to decant patients with non-surgical, straightforward conditions (such as refractive cases) to alternative eye care providers like optometrists, general practitioners (GPs), tele-ophthalmology, or with the use of new technology such as Artificial Intelligence (AI).

Examples of this model of care include Primary Eyecare Clinics (PEC) at Singapore National Eye Centre, Stable Eye Condition Clinics (SECC) at Tan Tock Seng Hospital, Community Eye Clinics (CEC) at selected polyclinics and the Singapore Integrated Diabetic Retinopathy Programme (SiDRP).

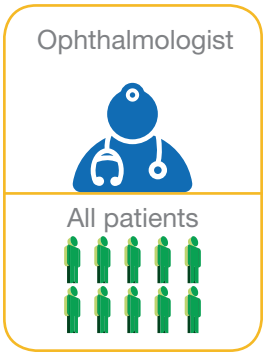
The original term used in the survey questionnaire was “Alternative model of care”. However, for clarity and ease of reference, the workgroup has amended this term to “Non-ophthalmologist centric model” instead.



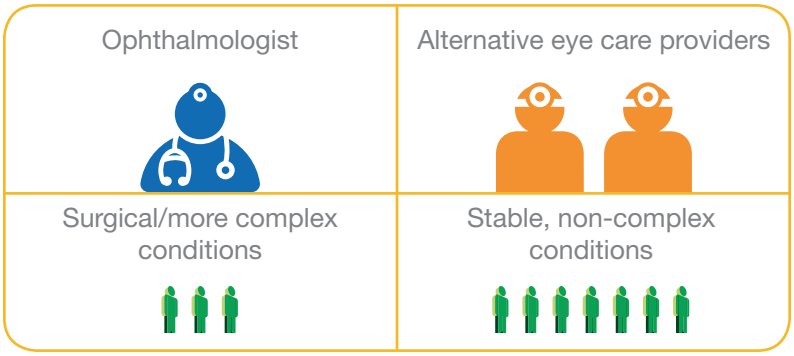
iii. **Hybrid model of care:**

This model proposes for patient load to remain with the ophthalmologists, while concurrently improving the standard of eye care delivery among alternative care providers such as optometrists, whilst under the purview of ophthalmologists.

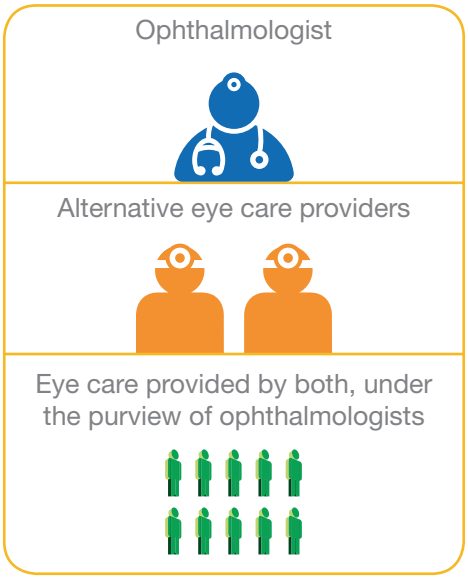
This model of care is currently being practiced at local public healthcare institutions.



Ophthalmologist-centric
model of care



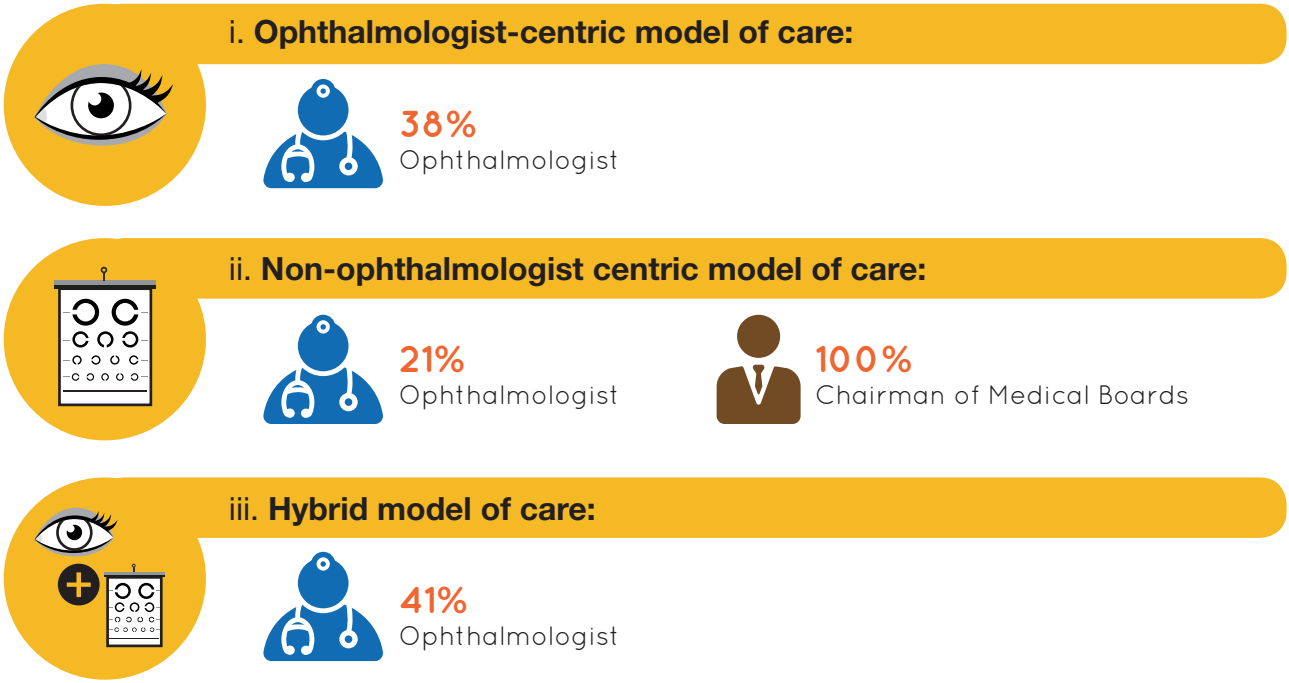
Non-ophthalmologist centric
model of care



Hybrid
model of care

3. For ease of reference, alternative eye care providers refer to optometrists, general practitioners (GPs), tele-ophthalmology, the use of artificial intelligence (AI) and programmes such as the Singapore Integrated Diabetic Retinopathy Programme (SiDRP). While hybrid model of care will be delivered by both ophthalmologists as well as alternative eye care providers, as mentioned above.

4. When queried on which model of care will best serve as a viable solution to alleviate the burden of eye care in public hospitals[8], 41% of the ophthalmologist respondents indicated the hybrid model, followed by the ophthalmologist-centric model with 38% and the remaining 21% chose the non-ophthalmologist centric model. The non-ophthalmologist centric model is also chosen by all the CMBs respondents[9] (all 5 whom have replied this question; 2 of them did not reply).



5. Although the non-ophthalmologist centric model generated the lowest response rate, over 80%[10] of the GPs and polyclinic respondents concurred that the management of certain eye conditions can be delivered by alternative eye care providers (such as optometrists). This is a way of utilizing the untapped capacity of allied healthcare professionals, while concurrently encouraging optometrists to increase their skills level in non-surgical areas such as prescribing special glasses for children, squints, etc.

26%[11] of ophthalmologist respondents also opined that the non-ophthalmologist centric model of care in the form of close collaboration with general practitioners through Primary Care Networks Scheme (PCNs) is a viable solution to relieve the burden of eye care in public hospitals, to meet the increasing demand from the population.

> **"Among the GPs and polyclinic respondents, over 80% concurred that the management of certain eye conditions can be delivered by alternative eye care providers."**

[8] Refer to Annex G
[9] Refer to Annex H
[10] Refer to Annex I
[11] Refer to Annex J

FUTURE OF EYE HEALTH CARE IN SINGAPORE

6. The current model of eye care is not sustainable. There is a need to increase the level of involvement and role that non-ophthalmologists play, within the eye care industry, under the purview of ophthalmologists. Therefore, the hybrid model of care is ideal. This model will allow non-surgical patients to be decanted to alternative eye care providers to relieve the burden in public hospitals, while keeping healthcare costs down and at the same time, maintaining the quality of care delivered.

> **"There is a need to increase the level of involvement and role that non-ophthalmologists play, within the eye care industry, under the purview of ophthalmologists. Therefore, the hybrid model of care is ideal."**

7. It is also recommended that these efforts be implemented within public hospitals, whereby accreditation and training efforts can be closely monitored and controlled. Such arrangements can also be right sited in the community via the Primary Eye Care Clinics (PECs).

8. It is worth noting that among the concerns pertaining to the non-ophthalmologist centric model of care[12], issues such as the variation in skill sets, knowledge and training among alternative eye care providers, as well as possible patient mismanagement, always come up as a top concern among respondents. Should this model of care be implemented, it is therefore pertinent to ensure that there is supervision from ophthalmologists.

9. While the ophthalmologist-centric model of care is desired by a significant portion of ophthalmologist respondents, the practical implementation of this model is challenging as it will involve changes to the current residency training programme and will also require more ophthalmologists to be trained. This option is thus not ideal, as insufficient available positions for the residents in the public hospitals[13] is the main concern expressed by the respondents, for this particular model of care.

10. In view of all the above concerns, the workgroup therefore recommends that the HYBRID model of care be adopted. This model fits the need of the public hospitals to relieve patient load, it also adequately addresses the primary concerns that pertain to the actual implementation.

> **"... the workgroup therefore recommends that the hybrid model of care be adopted. A sentiment that is shared by 69% of the ophthalmologist respondents, who felt that the proposed hybrid model of care is acceptable."**

A sentiment that is shared by 69%[14] of the ophthalmologist respondents, who felt that the proposed hybrid model of care is acceptable. Under this model of care, supply and demand will dictate the career choices of the residents. It is not necessary to define the sub-specialty track such as medical ophthalmology.

[12] Refer to Annex K
[13] Refer to Annex L
[14] Refer to Annex M

SUMMARY OF SURVEY RESPONSES RECEIVED

11. The survey received a total of **107** responses, they comprised:

    a. **84** ophthalmologists whom are fellows, past presidents and council members of the College of Ophthalmologists (Academy of Medicine, Singapore) as well as residents and ophthalmologists from the ophthalmology departments in the public hospitals.

    b. **16** are from CEOs of the 3 cluster polyclinics (SingHealth, NHG, NUHS) as well as general practitioners (GPs) from the Chapter of Family Medicine Physicians (AMS) and the College of Family Physicians Singapore.

    c. The last **7** are from Chairmen of Medical Boards (CMBs) of the respective public hospitals.

INITIATIVES BY OTHER HEALTH CARE INSTITUTIONS

12. Currently, the Clinical Optometry Practice Advisory Panel – Implementation (COPAP-I) Workgroup is tasked with the development and to advise on the implementation of the National Eye Care Strategy, with focus on:

    a. Developing and implementing population-based preventive and maintenance strategies.

    b. Developing primary eye-care capabilities through the development and implementation of new care models and re-defining team-based roles.

    c. Integrating primary and tertiary care through the development of shared referral and care protocols, and appropriate resourcing of primary care to facilitate right-siting of patients.

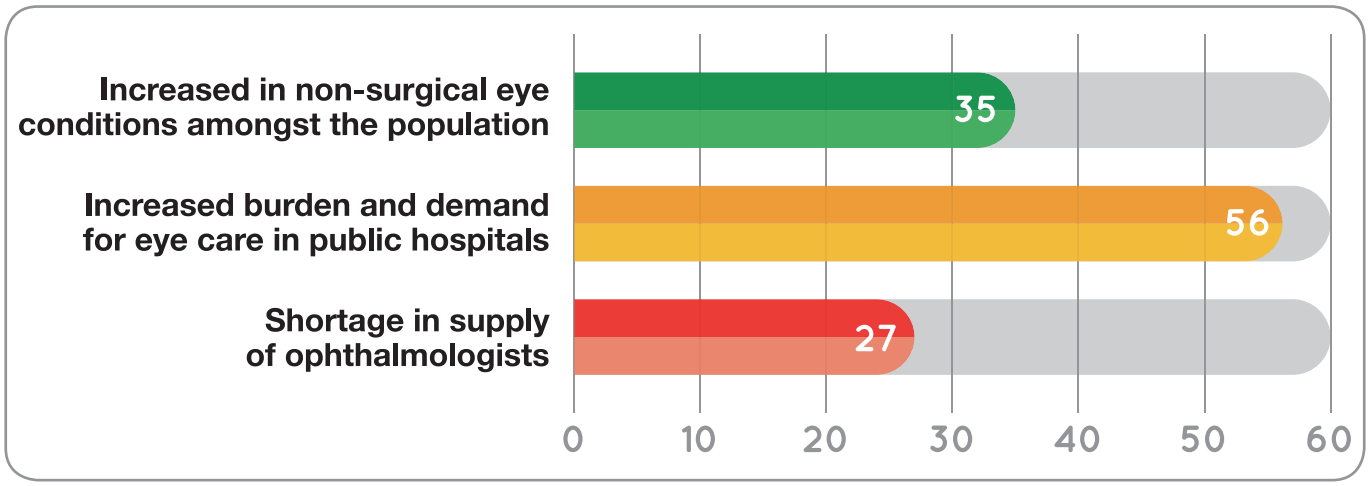
13. Punggol Polyclinic will also be housing a Community Eye Clinic from 30 July 2018[15], the first eye clinic in a polyclinic setting. This is in collaboration with the Singapore National Eye Centre. Patients with stable eye conditions such as early cataract, stable glaucoma, and diabetic eye conditions will be able to do their follow-up care closer to home.

[15] Teo, Gwyneth. (2018, May 23). Punggol Polyclinic pilots follow-up care for new mothers, opens eye clinic. Channel NewsAsia, Retrieved from https://www.channelnewsasia.com/news/singapore/punggol-polyclinic-healthcare-diabetes-new-mothers-10260194

ANNEXES

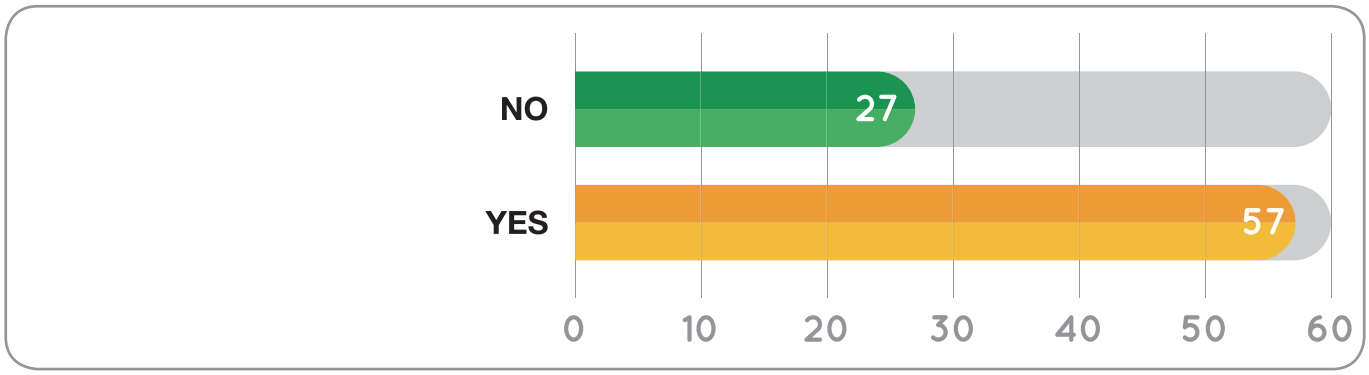
ANNEX A

Which of the following challenges, do you think the local eye healthcare services will face, by the year 2030? *You may choose more than one option.*



ANNEX B – Feedback from the ophthalmologist respondents

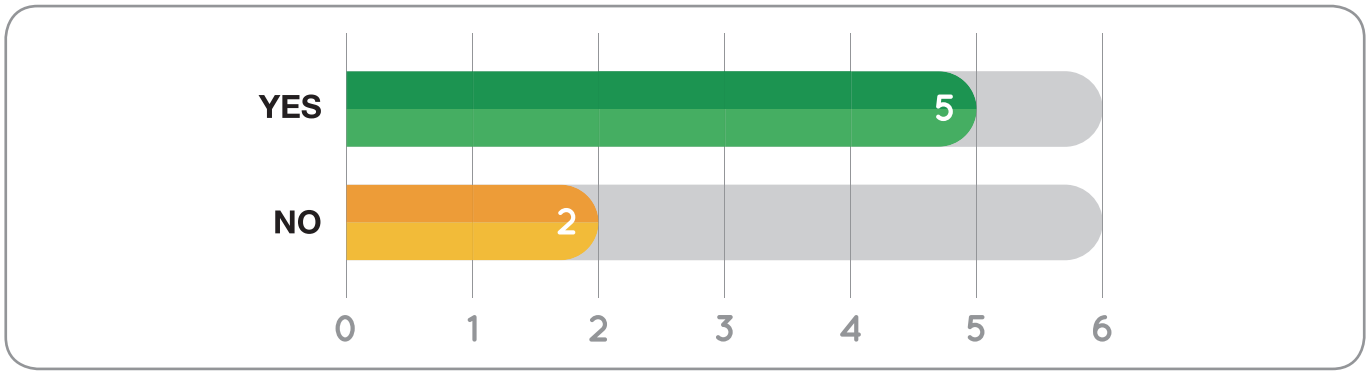
Based on the current business-as-usual model of eye care, and the growing demand of eye care services amongst the ageing population, do you think there will be a shortage of ophthalmologists by the year 2030, in the PUBLIC sector?



ANNEXES

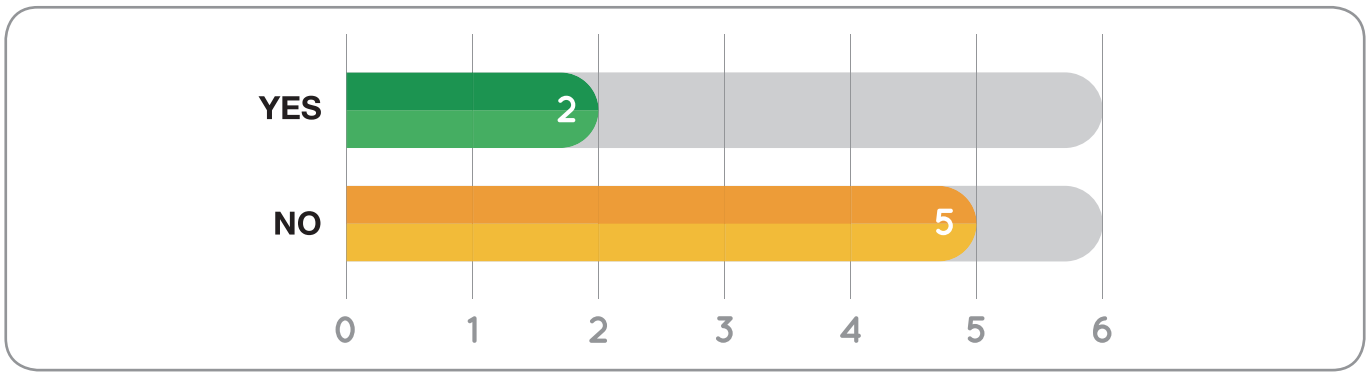
ANNEX C – Feedback from the CMB respondents

Based on the current business-as-usual model of eye care, and the growing demand of eye care services amongst the ageing population, do you think there will be a shortage of ophthalmologists by the year 2030, in the PUBLIC sector?



ANNEX D – Feedback from the CMB respondents

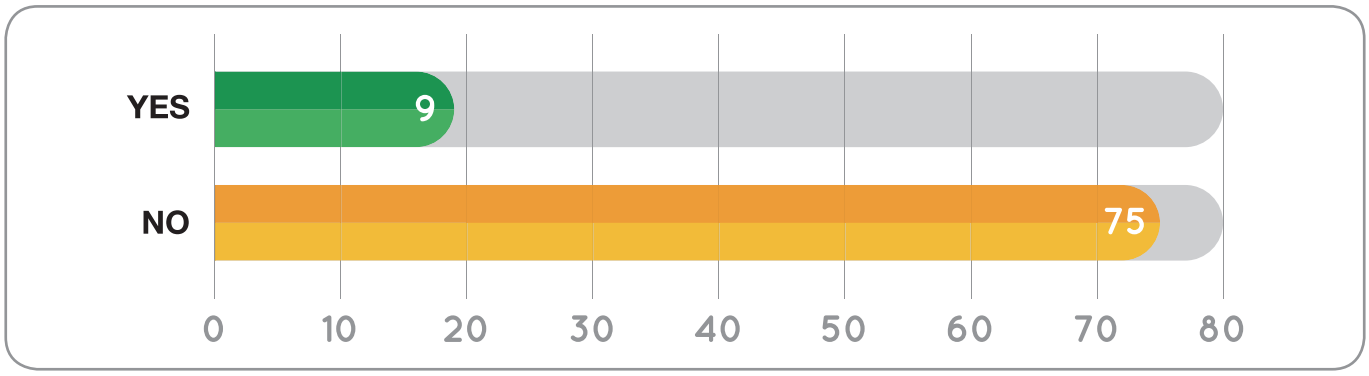
In your opinion, is the current model of managing eye care services and patients, sustainable?



ANNEXES

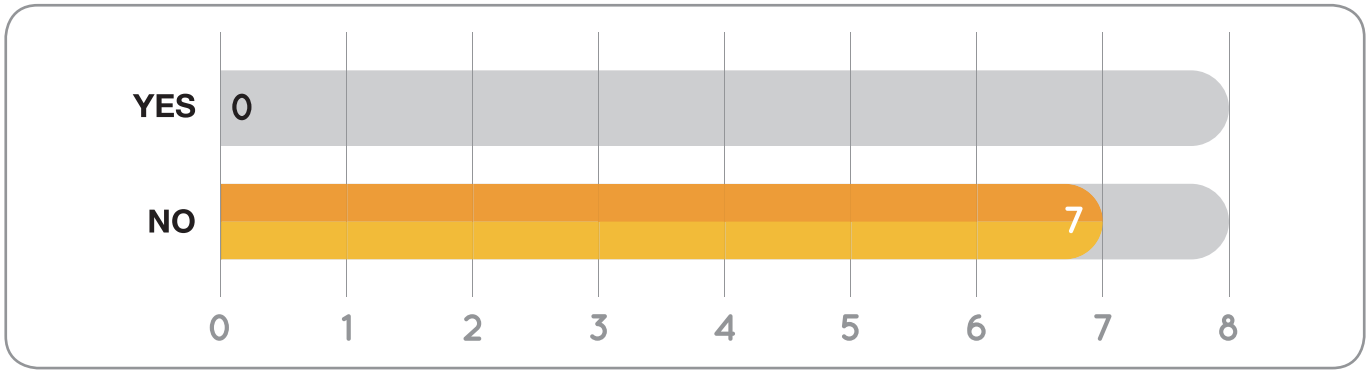
ANNEX E – Feedback from the ophthalmologist respondents

Based on the current business-as-usual model of eye care, and the growing demand of eye care services amongst the ageing population, do you think there will be a shortage of ophthalmologists by the year 2030, in the PRIVATE sector?

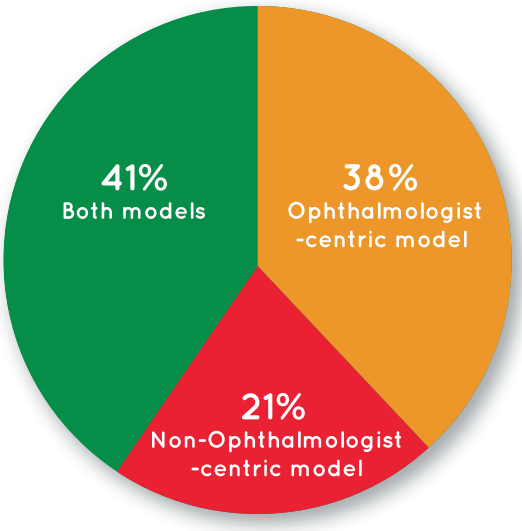


ANNEX F – Feedback from the CMB respondents

Based on the current business-as-usual model of eye care, and the growing demand of eye care services amongst the ageing population, do you think there will be a shortage of ophthalmologists by the year 2030, in the PRIVATE sector?

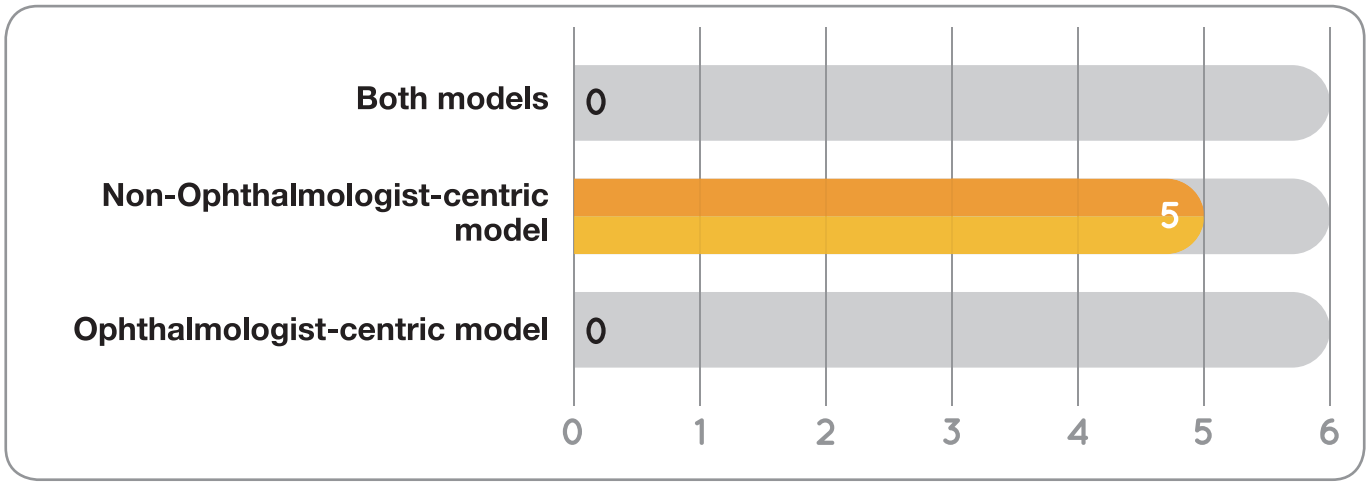


ANNEX G – Feedback from the ophthalmologist respondents



ANNEX H – Feedback from the CMB respondents

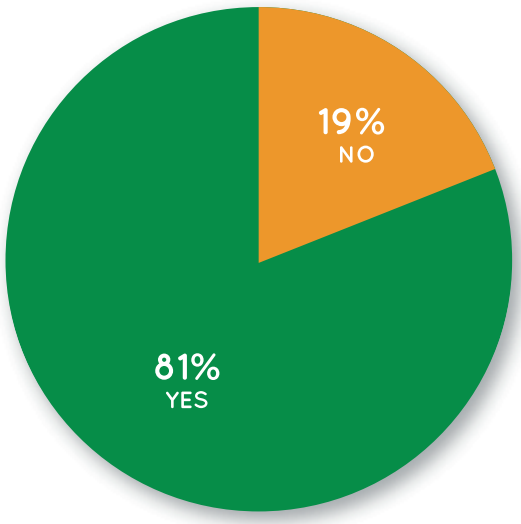
In anticipation of the ageing population and the resulting increase in prevalence of eye diseases by 2030, which of the following two models of care, do you think will best serve as a viable solution to alleviate the burden of eye care in public hospitals



ANNEXES

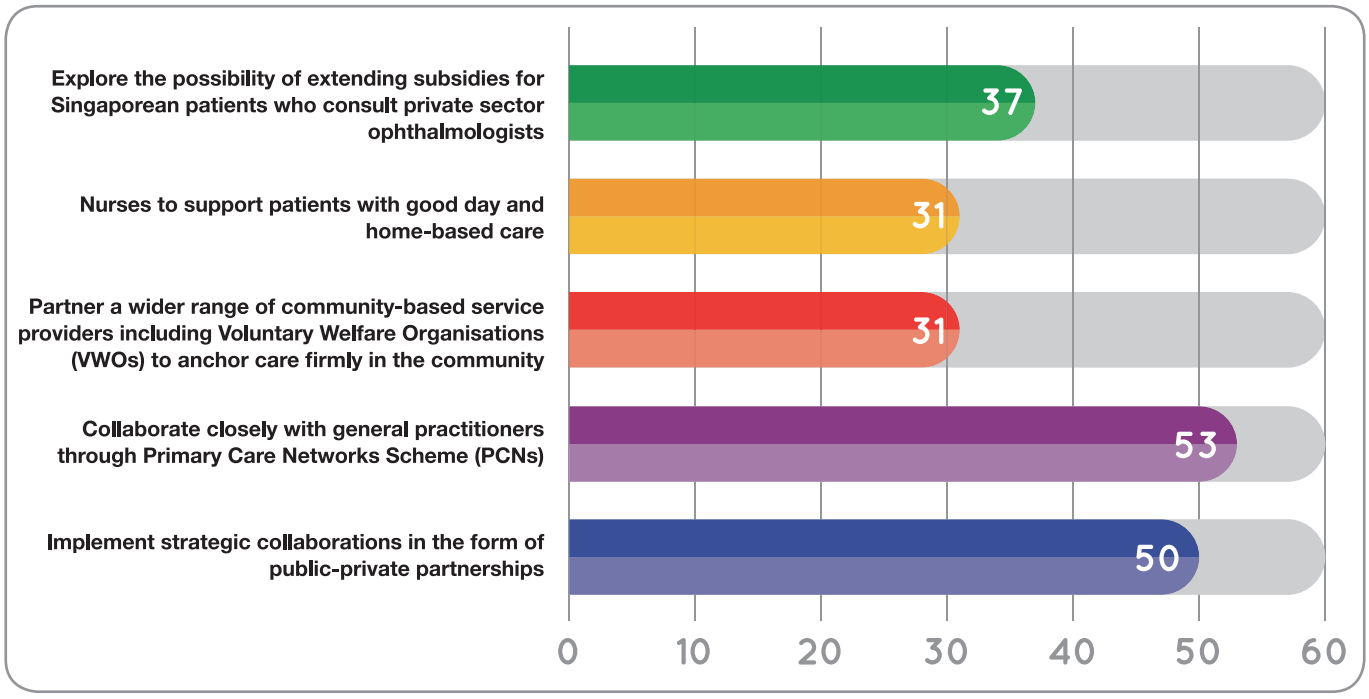
ANNEX I – Feedback from the GPs and polyclinic respondents

Do you think the management of certain eye conditions can be delivered by alternative eye care providers (such as optometrists and ophthalmic technicians)?



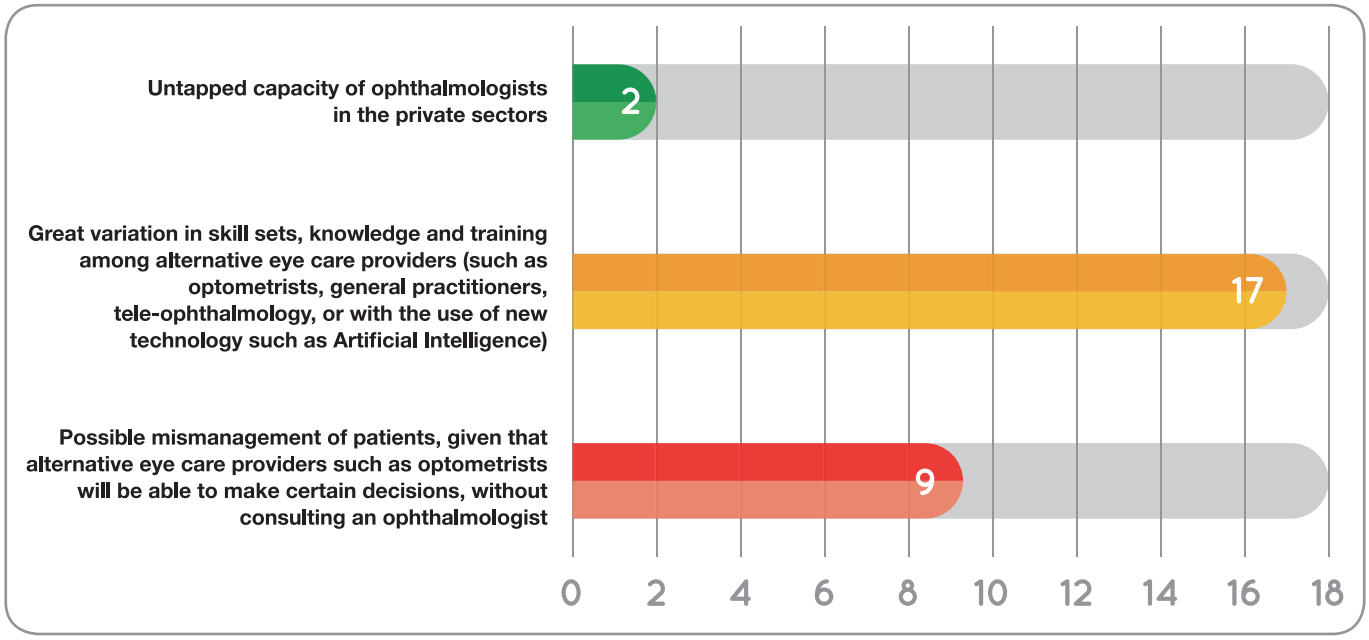
ANNEX J – Feedback from the ophthalmologist respondents

What other initiatives or efforts do you think can be done, to relieve the burden of eye care in public hospitals, to meet the increasing demand from the population? You may choose more than one option.



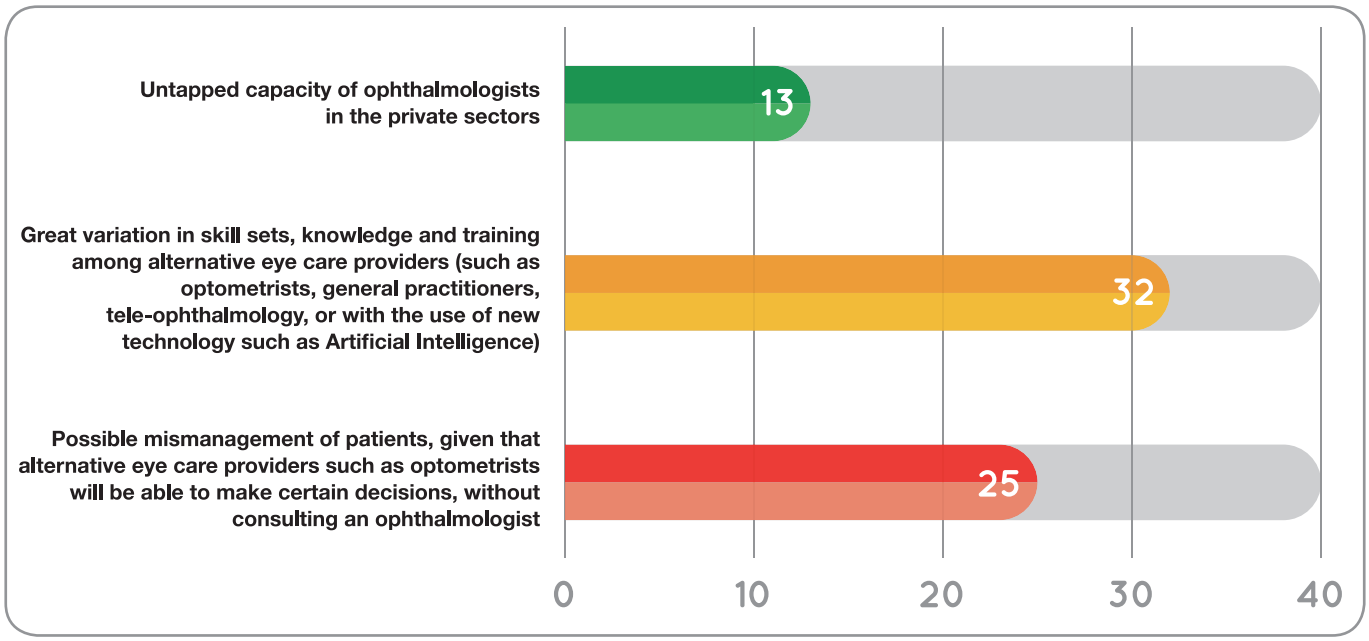
ANNEX K – Feedback from ophthalmologist respondents who chose the non-ophthalmologist centric model of care

In your opinion, what are some of the main concerns pertaining to the non-ophthalmologist centric model of care? *You may choose more than one option*.



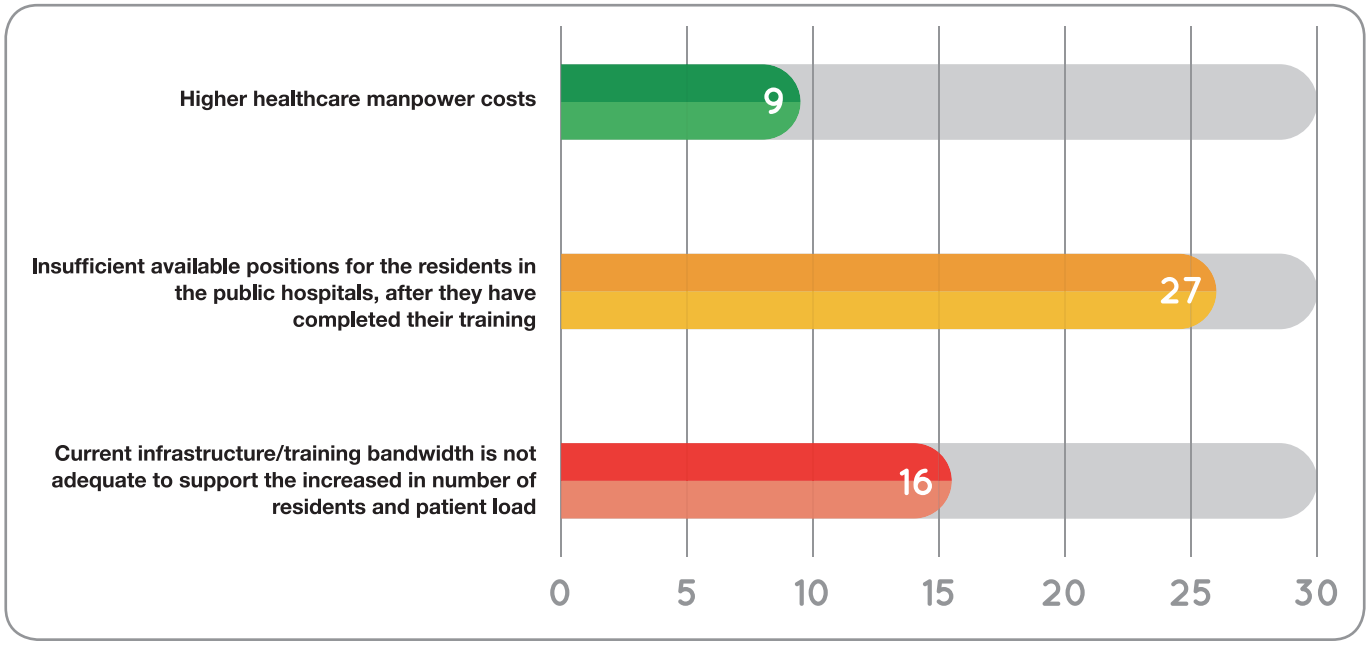
ANNEX K – Feedback from ophthalmologist respondents who chose the hybrid model of care

In your opinion, what are some of the main concerns pertaining to the non-ophthalmologist centric model of care? *You may choose more than one option*.



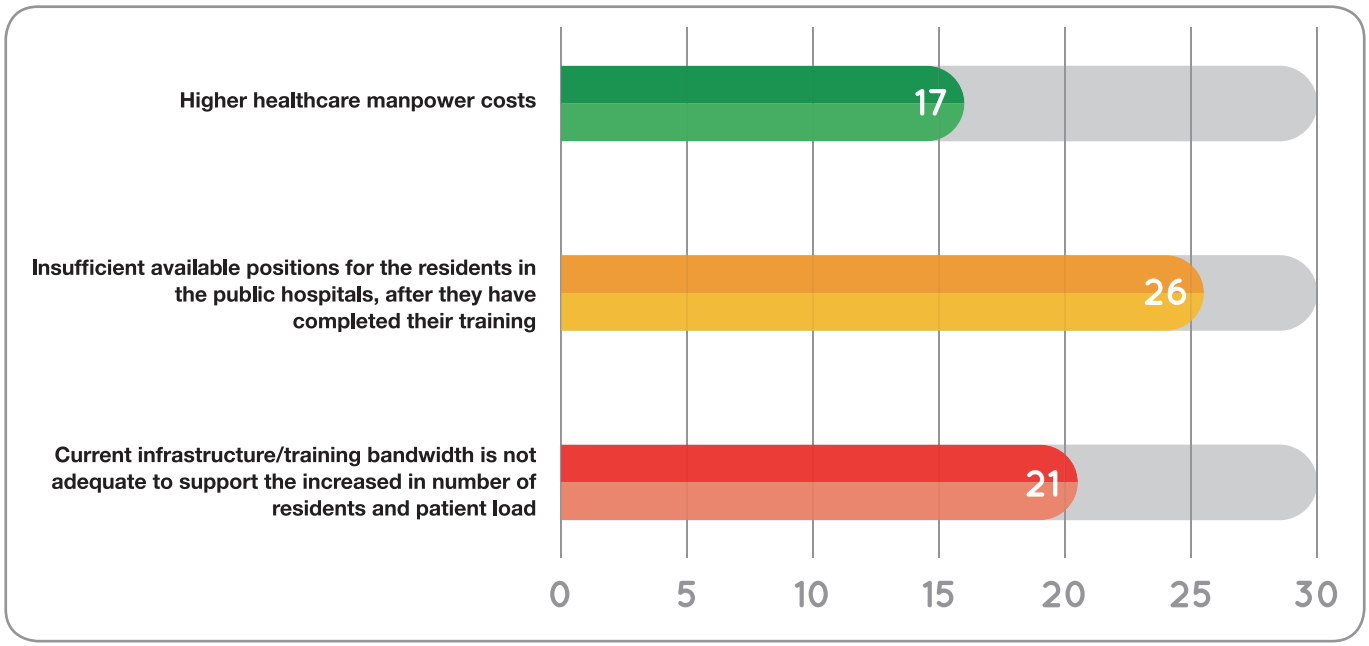
ANNEX L – Feedback from ophthalmologist respondents who chose the ophthalmologist-centric model of care

In your opinion, what are some of the main concerns pertaining to the ophthalmologist-centric model of care? *You may choose more than one option*.



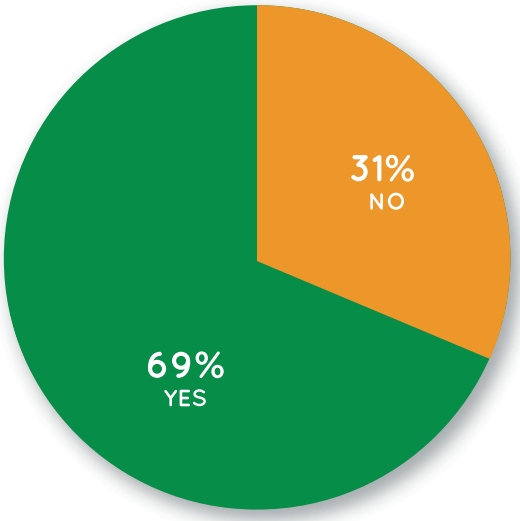
ANNEX L – Feedback from ophthalmologist respondents who chose the hybrid model of care

In your opinion, what are some of the main concerns pertaining to the ophthalmologist-centric model of care? *You may choose more than one option*.



ANNEX M – Feedback from ophthalmologist respondents

In your opinion, do you find the hybrid model of care, which proposes to allow for more medical ophthalmologists to be trained, while concurrently improving the standard of eye care delivery among optometrists under the purview of ophthalmologists, acceptable?



ACKNOWLEDGEMENTS

The Strategic Roadmap for Ophthalmology – Models for Future Eye Care in Singapore Executive Summary report is part of an initiative by the College of Ophthalmologists, Academy of Medicine Singapore (AMS), to guide how eye care will be provided to Singaporeans in the future.

Appreciation is extended to the President of the College of Ophthalmologists, Professor Wong Tien Yin, the College Council Members and the workgroup for their selfless dedication and expertise as well as everyone who has contributed to the development of this initiative. This includes all members who took part in the survey interviews and responded to the questionnaires.

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