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Report by Debbie Phyland

The Kilpatrick/Churchill Fellowship to study the prevention and management of occupationally induced voice problems among professional voice-users

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Dated

DEBBIE PHYLAND

5/4/03

“Give me an ear and I will give you a voice” Kahlil Gibran

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Précis

This report provides an overview of the many findings, highlights and confirmations arising from the 2002/2 Sir William Kilpatrick/ Churchill Fellowship visit to the United States, London and France which investigated the management of the “performer’s-voice”. The report addresses the prevention, assessment and treatment of voice from medical, speech pathology and vocal pedagogical vantages with a primary focus on singers. Specific areas of study included:

1. Diagnostic processes, standards of care and evidence-base in the evaluation of the singer’s voice
2. Service delivery models in management of vocal health among singers
3. Vocal health education, risk detection and prevention programmes for singers
4. Roles, responsibilities, competencies and skill prerequisites for team members
5. Technological advances and methodologies employed in voice care
6. Surgical, medical and therapeutic treatment options for voice problems among singers
7. Criteria and evidence-base for determination of performance fitness among singers
8. Identification of voice networks and information channels regarding vocal health for performers.

Acknowledgements

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I sincerely thank all the people I visited throughout the States and Europe for their boundless generosity in sharing their skills and knowledge and for their warm hospitality. Foremost, I am indebted to Dr Michael Benninger who helped me enormously in the planning and also opened his home to us over Christmas time. Thanks also to Joanna Cazden who was my first stop on the trip and showed such interest in my plans (and introduced me to the social side of LA). Similarly, Dianne Bless who helped me identify the key places to visit in order to realise my objectives and who was so generous with her hospitality. Linda Carroll and her husband Bill Riley were also generous and truly inspired me with their work. All of the team at Mass. Gen were wonderful and I thank Trish Doyle for her hospitality, openness and interest in my experiences too. Others who also deserve special mention are Melissa Kirby for welcoming me despite no warning of my visit, Mark Meylan for his skill, humility and company and Valerie Lim for her marvellous hospitality in Singapore when the trip was winding up and the energy levels were waning.

I am so appreciative of the preparedness of all the speech pathologists, ENT specialists and vocal pedagogues to share their knowledge and experiences with me. Each one played an important role in maximising my learning opportunities and in showing me true international camaraderie. I am also grateful to the many American speech pathologists and surgeons who were so supportive of my trip and but, due to time or geographical constraints, I unfortunately did not get to visit. I also extend my sincere thanks to the singers and 'patients' who so readily allowed me to watch them in clinic, in therapy, in surgery and in performance.

Thanks are also extended to the numerous speech pathologists and ENT surgeons back home who have shown great interest in what I learnt and who have already shown a preparedness to implement recommendations made, as a result of this trip. In particular, I am grateful for the support of my colleagues and referees for this fellowship, Drs Jennifer Oates, Neil Vallance and Malcolm Baxter.

Last but by no means least, I wish to thank my husband Chris and two boys, Tom and Joey for their wonderful excitement and interest in my new learning, for their support in the logistics of the trip (particularly coping with so many plane trips over so few days) and for sharing such a wonderful overseas adventure. And what an adventure it was!!

Executive Summary

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Fellowship objective:

- To investigate medical, speech pathology and pedagogical approaches to vocal health and voice care among professional voice-users

Fellowship scope and highlights:

1. Voice diagnostic clinics using videostroboscopy- participated in 8 Voice clinics and observed different models of assessment, team work, team-meetings/ward rounds, documentation and use of different technologies
2. Operations (phonosurgery)- observed Dr Steve Zeitels in Boston and Dr Jean Abitbol in Paris performing surgery on singers
3. Speech Pathology voice assessment and treatment- discussed and observed therapy sessions with singers and identified different techniques and approaches for both speaking and singing voice modes
4. Performance Medicine Centers-discussed and observed a variety of service delivery models for performers' needs
5. Voice Research labs- visited four of the pre-eminent voice research facilities (Wisconsin, Mass General, Nashville, Paris) and learned of their current projects, findings and future directions
6. Vocal coaching- met/watched/ discussed philosophies and approaches of four well-respected voice teachers. Witnessed two of them working with singers in rehabilitation, preventative health and/or developmental modes
7. Performance- attended 4 performances of different singers previously seen at voice clinic or at tuition. Evaluated the effect of vocal difficulties on their performance and identified contributing or occupationally-related factors that were/ had contributed to their vocal demise

Major Findings:

The science and art of vocal health for singers is a relatively new and highly specialised field of performance medicine. Within the USA, there are many Voice Centers that exemplify excellence in standards of care, skill and competencies and which host 'cutting-edge' technology and research endeavour. In Paris, there is also one such voice clinic. From my observations of all of these Centers and of other less developed or less well-resourced clinics, I determined that there is considerable scope for improving and developing voice care within Australia. Specifically, the findings on which this assertion is predicated were:

- Dedicated voice clinics provide the best model for assessment and management of voice- Centralising resources, personnel, skills, etc ensures patients receive the best voice care whereas, attempts to combine voice with general ENT practice diluted the service and frequently led to a lack of patient continuity and poor cohesion in standards of practice.

- Dedicated Performing Arts Centers were frequently abstract or ‘non-physical’ entities and served the function more of attracting funds than the provision of holistic medicine.
- Speech pathologists (SPs) working with singers need an in depth understanding of the physiology of the singing voice, of vocal pedagogy pertaining to singing and of performance issues and demands. All of the SPs visited in the USA were required to hold extra qualifications in vocal pedagogy or performance in order to work with singers
- The role of the speech pathologist working in US voice clinics differs in terms of roles and responsibilities to their Australian counterparts particularly in the operation of endoscopy and in the diagnostic process
- The establishment of a cohesive and skilled team and of strong networks with the performance industry is crucial to good patient outcomes and to the success or prosperity of voice centers

Actions arising from Fellowship findings:

Invited seminar presentations, written ‘discussion papers’ and other publications will be given to specific audiences over the next few months. These forums will aim to provide the impetus for review of our current practices and standards and to validate or recommend improvements or change therein. These opportunities include:

1. The Victorian Voice Interest Group, April 4, 2003
2. Research Colloquium, Faculty of Health Science, La Trobe University, April 10
3. Speech Pathology Association of Australia- National Conference, May 11
4. Australian Voice Association ½ day workshop, July, 2003
5. Australian Academy of Otolaryngologists/ Head & Neck Surgeons, June 2003
6. Australian National Association of Singing Teachers, July 2003

In addition to the professional groups, I intend to hold a 1/2 day workshop in June for performers regarding voice health (no charge). I also anticipate some media interest in this Fellowship since two of the radio announcers who interviewed me prior to my departure, have requested a follow-up interview and past experience suggests there is usually high community interest in voice care.

In terms of publications, I will be submitting a discussion paper for review by the Australian Voice Journal and will write a summary for the same organisation’s newsletter. I also intend to write a ‘Proposed guidelines for speech pathologists working with singers’ document for consideration by peers and for the Speech Pathology Association of Australia.

Fellowship Programme

Acronyms: SLP= Speech Language Pathologist, S= Singer, ENT= Otolaryngologist/ Ear, Nose & Throat Surgeon, VC= Voice Coach

A) USA

Los Angeles

November 28- 30

- Voice studio/ Consulting suite, SLP/ VC Dr Morton Cooper, San Vicente
- TV/Film station CNN 'Happy Hanukah/ Thanksgiving' Party

Detroit, Michigan

December 1-4

- Henry Ford Medical Center for the Performing Artist
- ENT Drs Michael Benninger & Glendon Gardner, SLPs Dr Barbara Jacobsen & Cindy Grywalski

Los Angeles

December 5-7

- SLP/S Joanna Cazden from Cedars-Mt Sinai Hospital & private practice

Chicago

December 9-10

- University of Chicago Voice Center, SLP Kate Devore & ENT Dr Yeman-Akah

Madison, Wisconsin

December 11-12

- University of Wisconsin Voice Center, ENT Dr Charles Ford, Dianne Bless & SLP/S Mary Sandage

Chicago

December 12-14

- Loyola Voice Institute, Lyric Opera Center, ENT Professor Robert Bastian, SLP/S Marina Gilman

Boston

December 16-18

- Massachusetts General Hospital Voice Center, ENT Drs Steven Zeitels & Ramon Franco, SLP Dr Robert Hillman, SLP/S Patricia Doyle & Mary Klimek-MacDonald

New York

December 19-21

- Grabscheid Voice Center, Mt Sinai Hospital, ENT Dr Peak Woo, SLP/S Dr Linda Carroll & SLP team
- Voice Studio, Dr William Riley, Voice Coach, Singing Teacher

Detroit, Michigan

December 23

- Henry Ford Hospital, Dr Michael Benninger

- Rockettes, Radio City Christmas Concert

Toronto, Ontario (Canada) December 27

- Visit cancelled by host

Nashville, Tennessee January 2-3

- Vanderbilt University Voice Center, ENT Drs Mark Courey & ??, SLP/S Melissa Kirby & SLP team
- St Thomas Medical Center, ENT Dr Steven Mitchell
- Live performances at The Honky Tonky Café and The Wild Horse Saloon

B) Europe

London, England January 6-7

- Voice studio, Mark Meylan, Vocal coach & Singing Teacher
- ‘The Lion King’ Musical Production

Paris, France January 9-10

- Consulting Rooms, ENT Dr Jean Abitbol
- Clinique Sainte-Isabelle, Operating Theatre with Dr Jean Abitbol & Phonosurgical team

Lyon, France January 14

- ENT Dr Mark Bouchayer, Retired from Polyclinique de Venisseux, Lyon

C) Singapore January 26

- SP Valerie Lim, Singapore General Hospital and voice team

Background/rationale for investigation

A) Singers as a high risk group

Actors and singers are premium vocal athletes not just in the amount they use their voices but in the type and extremes of voice used. Their voices are their primary tool of trade, their main mode of communication with an audience and one of their most powerful assets. These elite professional voice-users rely on the health of their vocal instrument to meet their occupational requirements. Performing, however, places many demands on the voice, many of which can potentially jeopardise vocal health. Singers rely on the integrity of their instrument to achieve their artistic outputs, yet the demands of this art form and the associated lifestyle are often a direct threat to the integrity of the instrument. Singers may sing extensively as part of their performance role, often using extremes of their vocal range or even vocally abusive patterns. Rehearsal and performance schedules can be excessive with limited periods for voice rest. The performance environments are frequently non-conducive to maintenance of vocal health (for example- dry, dusty, use of smoke machines or cigarettes for effect, acoustic limitations etc.). Because of these and other vocal demands, performers are considered at increased risk for the development of vocal problems.

It has also been suggested that singers' voices may be at risk because of the emotional stresses that can be associated with the performance industry and because of the lack of sufficient vocal education among many performers. Lifestyle, psycho-social and personality factors can predispose performers to the development of voice problems and there is an obvious need to improve performers' knowledge of vocal health so as to mitigate the effects of these factors.

Until very recently, there has been little sound data to support the clinical, anecdotal and workplace suggestions that singers are at increased risk for voice disorders in comparison with other occupational groups. A definite stigma has been associated with voice problems within the performance industry that has prevented identification of prevalence rates. Specifically, concerns regarding current and future employment prospects have prevented many performers with temporary or chronic voice problems from pursuing work cover claims or even notifying management of potential risk factors. Severe cases resulting in inability to perform are often attributed to "colds, flu or general health issues" rather than acute episodes of vocal trauma so as to minimise the perceived repercussions for performers of such a diagnosis. Similarly, this failure to disclose the real problem and the stoicism of 'at risk' performers to adhere to the edict "the show must go on", predisposes many performers to the development of more serious and long term voice problems. Many performers would indeed be able to meet performance requirements if employers knew the vulnerability of the performer and could compensate accordingly or proactively manage the situation.

Recent reports such as Evans et al. (1996) & Howse (1999) have reported the prevalence of voice problems among musical theatre performers per production to be approximately 21% and 16% respectively. These rates were derived from survey information and correspond to clinical impressions that singers are a high risk group for vocal injury.

Phyland et al (1999) reported that irrespective of singing style, 30% of singers were unable to perform due to a voice problem at some stage over a one year period. Over the past year, MVAC has seen 137 professional theatre performers (singers and actors) presenting with complaints of voice problems, who were performing in Melbourne at the time of assessment. Over the past four years, singers (theatre, opera, contemporary singers etc.) have constituted approximately 60% of our caseload. This distribution is representative of other voice clinics around the world, according to anecdotal evidence. It has also been our experience that the majority of voice problems are work-related and can be attributed to either acute or repetitive vocal injury. However, only approximately 10% of the 137 professional performers seen in the clinic sought Work Cover compensation or support.

The impact of these voice problems on singers is considerable. Symptoms such as vocal fatigue, lack of projective ability, hoarseness, voice breaks, voice loss and the physical discomforts of throat pain and dryness have many significant effects, particularly in the case of chronic voice problems. For example, individual performances may suffer and at worst, performances may need to be cancelled. In most cases this dire consequence can be averted if problems are detected early and managed proactively. If not, short-term problems can lead to extended periods of leave and even permanent vocal disability. Vocal rehabilitation through speech pathology management and/or surgical intervention can require several months of weekly voice therapy. There is therefore a great financial cost associated with voice disorders, particularly in Work Cover and rehabilitation payments and employment of replacement performers.

The high prevalence of voice problems among singers and the negative impact of such problems on performers, productions and on the performance industry in general indicate that allocation of resources for the development of effective prevention and voice education programs is warranted. An obvious opportunity exists to proactively manage vocal health among singers and to thereby diminish the occupational risks currently inherent in performance. The process could involve education on vocal health among performers, identification of “risk” behaviours and environmental concerns within individual productions, establishment of ‘standard care’ for performers with vocal difficulties and a shift in the culture of ‘voice stigma’. Establishment of a ‘voice-safe’ environment is a prerequisite to a decrease in the number of Work Cover injuries and more importantly to the lessening of potential for permanent vocal disability and handicap among performers.

B) Performance Medicine

Performance medicine has only recently come into play as a legitimate field of occupational health and indeed of medicine in general. Comparatively and somewhat surprisingly, the closely aligned field of sports medicine, has attracted much more attention and medical endeavour. The reasons for this discrepancy are not within the scope of this paper but the service delivery models used within sports medicine are often a useful analogy to draw upon or at least provide a template for the more embryonic performance medicine centers. The USA has been the main leader in the establishment of dedicated voice centers as part of the performance medicine arena and is hence the primary focus of my visit. Within Australia, there are comparatively few voice centres

(approximately 8 in total) and none that specialise in the assessment and management of the singing voice as part of a holistic 'performance medicine' centre. In addition, the voice centres within Australia were all incepted under ten years ago compared to some in the States having been in existence for 15-20 years.

C) What I wanted to learn

Within this broad area of performance voice, I had many aims and desires that I hoped would be fulfilled by the Fellowship tour. During the planning process, I realised that I had to narrow the brief or I would never return from my travels since the goals were somewhat ambitious. There was a burning question that kept returning to me and in fact it was the original reason for my application for the Fellowship: how does one determine whether or not a singer can perform? It had seemed to me that this was a central issue to my clinical practice and to the issue of occupational health and safety for vocalists. A search for published literature had revealed scant or contradictory criteria for the determination of vocal/ performance fitness, yet clearly, decisions about a singer 'going on stage' or not, had high stakes associated with it. This became my chief question throughout the trip and formed the foundation on which to pursue the other avenues of enquiry.

In order to determine performance fitness, it was necessary to look at the diagnostic processes involved in the evaluation of a singer's voice. Identifying the 'state-of-the-art tools and 'gold standards' of assessment were paramount. The roles of the different professionals in these processes, their skills, competencies and evidence-base were part of my information gathering. From this, I wished to know what criteria were considered important in the ability of a singer to sing or perform or which were contraindications for performance. In addition, what accountability did team members have for making these recommendations? Should the singer perform, what role did the team take in ensuring the success of this outcome and what follow-up did they offer? Did the status of the singer or the stakes associated with the performance influence the decision? What other variables influenced the determination of vocal fitness.

Secondly, I wished to know whether the service delivery mode impacted on voice care for the singers. Specifically, many voice centers are university-based, many are based in 'stand-alone' private practices and others are an adjunct to general 'head and neck/ otolaryngology' services within a hospital setting. Since the health care systems in both the USA and Europe differ considerably from that of Australia, I was interested to see whether these differences changed the nature of service delivery for voice.

Once a voice disorder had been diagnosed in a singer, I was also interested to learn how it was managed. Criteria for determining whether surgery was indicated and the surgical choices for different conditions were sought from the various surgeons. Did the criteria or surgical options differ for singers than other professional voice-user groups? What therapy options, the timing of treatment and which specific approaches were used were just some of my queries. In particular, I was interested to know which drugs (Cortisone?) were used or denied and which symptomatic therapy approaches were/not considered useful in the treatment of the singer's voice.

My final goal was to learn of any voice care or preventative programmes that may have been provided by the voice teams, specifically geared to the singer. Were singers aware of their vocal health needs and of the options available to promote or maintain their health? What networks existed to facilitate communication between the chief stakeholders and to ensure accountability in the provision of voice care among singers?

These were just some of the questions I had in mind when planning the trip. The next part of this paper describes how these questions were answered by my experiences in the USA London and Paris.

D) What I learned

The identification of what I learnt is a difficult task as so much was gleaned from this wonderful opportunity. Rather than discussing each institution individually and so as not to be seemingly praising some individuals to the exclusions of others, I will attempt to mostly summarise the main themes. It is useful to separate these into the core objectives of my trip as hitherto described in the précis.

1. Diagnostic processes, standards of care and evidence-base in the evaluation of the singer's voice

All of the voice centres impressed the importance of videostroboscopy as the standard diagnostic tool in the medical evaluation of the singer's voice. They were all similar in their processes of case-history taking and data collection, although there were some that more comprehensively focussed on the singing voice mode than others. Although all agreed in principle that a vocal capabilities battery was a prerequisite to accurate diagnosis, many did not include this at all, or for all patients and they differed in the definition of such. In addition, the personnel who conducted this evaluation ranged from ENTs, speech pathologists (the most common) and singing teachers. Measurements made from these tasks were used to corroborate endoscopy and strobe findings rather than to act as assessment tools in their own right since there was a notable lack of normative data for performance on these tasks.

The protocols for stroboscopic evaluation of voice were fairly standard across institutions but there were some minor variations that I will incorporate in our own strobe evaluations (for example, image capture of still motion superior lip, closed and inferior lip and of different voice modes). It was unusual for the voice clinics to evaluate supraglottic function and I rarely witnessed the use of flexible nasendoscopy for voice evaluation.

It was interesting to note that the routine protocols and standards used in voice assessment for singers were abandoned in the case of the highly elite singer. In four cases out of five when a VIP singer was assessed, they were seen at their hotel room or in the office of the ENT specialist without the Speech pathologist and in all cases without the assistance of stroboscopy as the first stage of diagnosis. When asked why this was the case, the ENTs suggested that the singer needed medical attention rather than information about their fitness to perform. All agreed that it would have been also useful to have

information about vocal capability as measured by a Vocal Capabilities Battery but they weren't sure whether the performer would have agreed to undertake the tasks. The ENT who maintained his usual assessment protocol even with elite singers challenged their actions and suggested that they were denying the elite singer the golden standard of care and making less informed judgements of vocal risk and status.

Acoustic evaluation was rarely part of the initial diagnostic process except in Paris and at Dr Bastian's clinic. It was however frequently used along with perceptual evaluation once therapy was determined as the management choice and as a pre-operative baseline for medico-legal purposes. In most cases this involved the use of Computerised Speech Lab and a sound level meter with measurement of fundamental frequency, intensity, perturbation, harmonic: noise ratios and voice range profile. Spectrographic assessment was also sometimes conducted. All voice clinics, other than two which were in the general outpatient rooms of a medical centre, had pianos (some even baby grands!) which were routinely used in the evaluation and management of the singing voice. At Vanderbilt Voice Center they also had a guitar and mandolin for the country and bluegrass singers respectively.

2. Service delivery models in management of vocal health among singers

A variety of different service delivery models were observed ranging from 'stand-alone' voice clinics or based around hospitals, universities and private practices to those that were part of a Performance Medicine Centre. Some clinics were dedicated only to voice whilst others operated within a general ENT practice. From my observations, dedicated voice clinics provide the best model for assessment and management of voice. They were able to attract funding, centralise resources and develop specialisation and skill amongst personnel that seemed to result in a more comprehensive and client-centred service. Alternatively, attempts to combine voice with general ENT practice diluted the service and frequently led to a lack of patient continuity and poor cohesion in standards of practice.

Dedicated Performing Arts Medicine Centres were frequently abstract or 'non-physical' entities whereby there was no central building or facility but key personnel had joined forces and were linked by a concept of excellence in their particular sphere of performance medicine. There were no ward rounds or formal case discussions/collaboration but performers were able to contact a central bookings person who would link them with the appropriate specialists. This service did not seem to act as a 'voice triage' either but did enhance singers' awareness of care options. It also served the function of a marketing tool and provided an umbrella for collaborative research endeavours thereby attracting research funds and considerable media interest. There are other models of Performance Medicine Centres that are centralised into one facility but, as unfortunately I did not visit these, I am unable to compare them to other models of service delivery.

3. (1)Vocal health education, risk detection and prevention programmes for singers
(11)Identification of voice networks and information channels regarding vocal health for performers.

There were fewer preventative health programmes in operation than anticipated, although this varied across institutions. One Center that merits special mention is the Vanderbilt Voice Center in Nashville. They had established many relationships with the music industry and were impressive in the amount of time spent and in the nature of their vocal awareness programmes. Specifically, there are over 60 recording labels in Nashville which provide a variety of musical styles but focus on Country and/ Western, Bluegrass and Contemporary Christian. Many of the Recording Companies request and subsidise a voice evaluation including stroboscopy, prior to signing their artist or prior to going on tour. (If a voice problem is detected, they require the singer to then undergo rehabilitation or companies may subsidise the speech pathologist to go on tour with the performer and maximise vocal health, endurance and performance reliability). Vanderbilt also ran many seminars for singers, speech pathologists, singing teachers, choral directors and ENT specialists which served the purposes of increasing vocal health awareness, improving standards of care outside the voice center and of marketing the voice center.

There were also many examples of keen marketing on the part of the voice institutions and in some cases of individuals via television, radio and print media which also enhanced and promoted vocal health. Many professionals wrote regular editorials or invited papers in newsletters to singers and teachers and some convened discussion groups, or published information specifically for promotion of improved vocal health. There was no evidence of risk detection within the musical theatre industry and management of this group tended to be reactive more than proactive. Similarly vocal health prevention and education of actors in the dramatic arts were not a primary population of focus within the institutions I visited.

The networks between other performing arts medicine facilities are becoming stronger and this was attributed by many to the efforts of a large organisation within the US, PAMA (Performing Arts Medicine Association). Dr Stephen Mitchell is the Convenor of this group and my visit with him confirmed the belief that improved communication between such facilities will enhance holistic and specialised management of the performer. This group holds an annual Conference and provides a trimester journal, the chief purpose of which is to improve knowledge and management of performance-related injuries.

4. Roles, responsibilities, competencies and skill prerequisites for team members
The most inspiring aspect of my visits to all the Voice Centers and of the individual professionals I met, was the high level of skill and specialisation I encountered. All of the speech pathologists working with singers within the Voice centers had a singing background themselves and most had an extra qualification in music or vocology. Some of the speech pathologists had sung professionally and had successful careers prior to studying speech pathology. Selection criteria for speech language pathology positions involving working with singers included a degree in singing, performance or music as essential. In addition, among all of the SPs, there was a highly specialised level of skill

and knowledge in voice science. Many of the ENTs were also singers or at the very least amateur theatrical performers. Many specialised only in laryngology or combined it with sinus surgery or otology rather than include the major head and neck surgery caseloads.

The speech pathologist was an essential part of the team in all the voice centers but the role of the SP differed in terms of the involvement in the diagnostic process. Most SPs performed the videoendoscopy procedure (with or without strobe light) which is not the common practice of SPs in Australia. However, some SPs were not permitted to interpret the findings of this procedure but acted more as technicians performing a procedure, whereas the ENT was the diagnostician. Others were present during the endoscopy and invited to interpret functional aspects and to have input into the interpretation of the findings as part of the team. Still others were referred a singer after the ENT had performed stroboscopy and had diagnosed the voice disorder without their input. In the main however, the SP was an important part of the diagnostic process particularly when the equipment was located in a hospital and not in the ENTs private consulting rooms.

5. Surgical, medical and therapeutic treatment options for voice problems among singers
General voice management options for voice problems among singers did not differ greatly across the Centres and from their Australian counterparts. There was a commitment among all the centres to offer the highest level of care and intervention, to avoid surgery unless necessary and to manage all aspects of the disorder (impairment, disability, handicap & the well-being/ distress aspects). The phonosurgical procedures I observed were innovative and bore witness to the high level of specialty and skill required to achieve favourable outcomes in the singer population. Similarly, I gleaned an enormous number of “tricks of the trade” from the speech pathologists and learnt of their preferences and dislikes in therapy approaches. The rehabilitation of the singing voice as well as the speaking voice was an area embraced by most of the speech pathologists visited. This was only undertaken by those who had a singing background.

Prednisolone was routinely given for singers who had signs of inflammation or oedema and who needed to be able to perform within the next 48 hours. This was always only a short-term course but was more widely accepted than I would have anticipated. Anti-reflux management was also wide-spread and proton pump inhibitors were often prescribed as both a diagnostic and therapeutic tool for laryngo-pharyngeal reflux.

The therapeutic processes and the individual therapy exercises that I learned are too numerous to discuss but have provided me with countless ideas for the future. The pervading theme was the need to have a strong physiological rationale for the choice of approach and to be skilled in the implementation of this.

6. Criteria and evidence-base for determination of performance fitness among singers
At every centre that I visited I enquired about their opinion regarding the determination of a singer's vocal fitness for a safe and reliable performance. The answer is obviously dependant on a myriad of factors but there was some common agreement. For example, all agreed that a haemorrhagic vocal fold was a contraindication to performance. The

presence of a prominent vessel or varix was more controversial and depended on the acuteness of the symptoms and whether it affected the vibratory edge of the fold. Most teams had a Plan B approach which was sing with restrictions, unless there was a risk of further damage. All agreed that it was necessary to determine a singer's vocal capabilities as well as know the state of the vocal folds. They also agreed that we have a long way to go in both our understanding of the relationship between the vocal fold structure integrity and it's effect on function and in assessment before we can accurately and standardly identify the selection criteria for vocal fitness.

Conclusions

The voice centres and people that I visited provided me with countless pearls of wisdom and insights into the world of voice care among singers. At a ‘big picture’ level, I have had the opportunity to compare different models of service delivery for voice care and to get a strong sense of what is ‘cutting edge’ in knowledge, skill, research and practice. This has inspired me to challenge some of our existing edicts and practices but it has also served as an affirmation that most of our Australian practices are in line with current research and trends. At the detail level, I have gleaned countless tips and tricks of the trade that will make me a much better voice clinician and that have galvanised me into pushing the boundaries of my own knowledge at the local level. My initial curiosity regarding performance fitness has not been fully satiated. I do however now have a clearer idea of the indicators commonly accepted as critical in determining whether a singer should or should not go on stage. I am committed to promoting better vocal health practices among singers and to instigating vocal health awareness programs to facilitate this.

The findings arising from the Fellowship have significant implications for the singing industry. It had been our experience that Australian singers are a high risk group for the development of voice problems and the American and European singing population seem to be faced with similar prevalence rates and with similar threats to vocal health. The major difference between ‘us and them’ however, would seem to be a discrepancy in the availability of resources and even in standards of care or specialisation in clinical management of the singer’s voice. This may be understandable in view of the differences in population size but there is definite potential for better standards of care and improved dissemination of vocal health knowledge amongst all stake holders within the Australian singing industry, particularly the singers themselves. Voice centres need to take a more proactive approach and develop better links with this industry so as to, at the very least, mitigate the financial and artistic consequences of vocal injury. In addition, we need to ensure that our standards of care and therapeutic practice have a strong evidence-base so as to ensure the best outcomes in vocal rehabilitation and attainment of optimal performance fitness.

Recommendations

-establish or improve vocal health awareness and preventative programs for singers with a focus on the need for videostroboscopy as the standard care in assessment of the singers voice

-establish guidelines with Victorian Workcover Authority for the prevention, assessment and management of occupationally-induced voice injuries

-prepare a paper addressing 'Recommended Core Competencies for Speech Pathologists Working with Singers' for consideration by the Speech Pathology Association of Australia

-development of guidelines for determining 'fitness to perform' for use by Australian voice teams

-Voice Centre-driven education programs regarding current standards of practice in voice for General Medical Practitioners and ENTs who don't specialise in voice

-develop or improve communication networks with the performance industry and educate employers on their duty of care for singers (for example, recording companies, major resident theatre companies). Actively promote 'risk minimisation'.

-encourage regular contact between Australian voice centres to maintain and enhance professional knowledge and to maintain cohesion in voice care.

References

1. Phyland, D., Oates, J. & Greenwood, K. (1999). Self-reported voice problems among three groups of professional singers. Journal of Voice, 13:4, 602-611
2. Bastian, R.W., Keidar, A., & Verdolini, K. (1990). Simple vocal tasks for detecting vocal fold swelling. Journal of Voice, 4, 172-183.
2. Brodnitz, , F.S. (1984). Voice problems of the actor and singer. Journal of Speech and Hearing Disorders, 19, 322-326.
3. Chmelar, R.D. (1990). Health insurance and worker's compensation issues and performing artists (part I). Medical Problems of Performing Artists, 5, 67-71.
4. Chmelar, R.D. (1990). Health insurance and worker's compensation issues and performing artists (part II). Medical Problems of Performing Artists, 5, 101-105.
5. Coleman, R.F. (1987). Performance demands and the performer's vocal capabilities. Journal of Voice, 1, 209-216.
6. Eller, N., Skylv, G., Dahlin, E., Suadicini, P., & Gyntelberg, F. (1992). Health and lifestyle characteristics of professional singers and instrumentalists. Occupational Medicine, 42, 89-92.
7. Evans, R.W., Evans, R.I., & Carvajal, S. (1996) A survey of injuries among Broadway performers: Medical Problems of Performing Artists, 11, 15-19.
8. Zeitlels, S.M., Hillman, R.E., Desloge, R., Mauri, M. & Doyle, P.B. (2002) Phonosurgery in singers and performing artists: Treatment outcomes, management theories, and future directions. Annals of Otology, Rhinology & Laryngology: supplement 190, 111, 12, 21-40.