Role for Opinion Leaders in Promoting Evidence-Based Surgery

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Hypothesis: “Opinion leaders” can be identified by surgeons from among their peers, and opinion leaders have a role in promoting best surgical practice.

Design: Postal survey.

Setting and Participants: Four hundred eighteen (77% response fraction) randomly selected fellows of the Royal Australasian College of Surgeons.

Main Outcome Measures: Number of opinion leaders identified locally, statewide, and nationally; ratings of 22 possible attributes in conferring status as an opinion leader; and views about and ratings of the role of opinion leaders.

Results: Most respondents were unable to identify a local colleague whom they considered to be an opinion leader in their own specialty (mode, 0; and median, 1) or in surgery in general (mode, 0; and median, 0). Estimated numbers of opinion leaders were significantly higher at the state and national levels for the respondents’ own specialty and for surgery in general (P<.001 for all). Surgical expertise and teaching skills were rated most highly as conferring status as an opinion leader. Academic and professional contributions received the lowest ratings. Most surgeons (88%; 95% confidence interval, 84%-91%) agreed that opinion leaders could influence them to change their practice. Opinion leaders were rated as “very influential” by significantly more surgeons than clinical audit (38% vs 27%, χ²=13.6, P<.001) and clinical practice guidelines (38% vs 24%, χ²=21.4, P<.001) (McNemar test for both).

Conclusions: Australian surgeons support the concept of opinion leaders. Although few local colleagues whom they consider as fulfilling such a role can be identified, opinion leaders are evident at a national level. Once opinion leaders are identified using attributes ranked in our survey, interventional studies will further delineate their influence in improving evidence-based surgical practice.

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Evidence-based medicine is based on the premise that better health outcomes will be achieved if the findings of research are incorporated with clinical expertise and patients’ preferences when making decisions about treatment.1 Timely uptake of new knowledge arising from clinical research has been advocated.2 As in other branches of medicine, however, there can be considerable delay in the transfer of new knowledge from research into actual surgical practice (“research transfer”). Inadequate use of effective prophylactic anticoagulation,3 inappropriate use of antibiotics to prevent surgical wound infection,4 and selective implementation of national guidelines for acute pancreatitis5 are examples in which routine surgical practice has lagged behind the scientific evidence. Clinicians traditionally keep abreast of developments in their field through continuing medical education. Passive methods of continuing medical education such as conferences and lectures have limited, if any, effect on actual clinical practice, however.6 In response, there has been increasing interest in more innovative methods to enhance research transfer.7 Use of “opinion leaders” is one of these.8 Opinion leaders are those perceived by their colleagues as “educationally influential.”9,10 Based on the theory of diffusion of innovations11 and social influence research,12 opinion leaders are hypothesized as facilitating research transfer by raising awareness and swiftly communicating information about innovation within professional networks. Furthermore, opinion leaders are thought to influence the judgments and beliefs of their peers in response to new knowledge and play a “sanctioning” role in the uptake of new technology.10,13

There has been long-standing academic interest in opinion leaders and how
to identify them in professional networks. In their seminal study conducted in the 1970s in 8 community hospitals in North America, Hiss and colleagues interviewed 16 physicians and medical educators to identify potential characteristics of opinion leaders. They then developed a list of 26 descriptive statements about opinion leaders, which was included in a questionnaire subsequently administered to 304 practicing physicians in Michigan. Respondents were asked to rate these statements, permitting the most important attributes of opinion leaders to be identified through factor analysis. A second questionnaire was then sent to 74 other physicians to determine which statements discriminated between opinion leaders and physicians in general. From their findings, the researchers identified 9 statements that best described attributes of opinion leaders. These 9 statements then were used in a survey of physicians to identify specific professionals who were opinion leaders within community hospitals.

The questionnaire by Hiss et al has been used or adapted in subsequent studies to identify professionals who influence their peers. For example, Lomas and colleagues used the questionnaire to identify 4 local opinion leaders to lead an educational intervention to reduce elective caesarian section rates in a trial conducted in 16 district hospitals in Ontario, Canada. In their study, opinion leaders were significantly more effective than audit and feedback at increasing the number of women offered a trial of labor and improving rates of vaginal birth. Similarly, Soumerai and colleagues used the questionnaire in a survey of 772 physicians to identify opinion leaders for a trial to improve the quality of cardiac care involving 37 hospitals in Minnesota. In hospitals allocated to the intervention group, the physician ranked most highly by respondents to the survey was approached to participate in the intervention. Soumerai et al demonstrated that advocacy by these local opinion leaders plus performance feedback enhanced the uptake of evidence-based management of patients with acute myocardial infarction.

Although neither of these studies involved surgeons, it is plausible that opinion leaders also influence surgical practice. Unlike general practitioners and other health professionals, who typically work alone for most of their day, surgeons work in teams. The hospital-based setting of much surgical practice affords surgeons numerous opportunities for formal and informal meetings and sharing of information with peers. Few studies have been conducted to investigate the influence of opinion leaders on surgical practice, however. In 2000, Guadagnoli and colleagues reported a randomized trial involving 28 hospitals in Minnesota that demonstrated that education from an opinion leader was as effective as performance feedback at improving preoperative communication about surgical treatment options for women with breast cancer. In the United Kingdom, a nonrandomized evaluation of opinion leaders involving 2 matched orthopedic wards found significantly better postoperative pain management in the intervention ward.

Yet, many aspects of opinion leaders remain unclear. Interpretation of the evidence that opinion leaders promote change in clinical practice is hindered by our limited understanding of what opinion leaders actually do. For example, the differential effectiveness of local opinion leaders who are known personally by surgeons compared with national leaders or experts has yet to be determined. It also remains unclear how appropriate opinion leaders in surgery should best be identified. Although the survey instrument by Hiss et al provided one means to identify local opinion leaders, its validity never has been established among surgeons. Furthermore, their questionnaire was developed 23 years ago. Not only are the views of surgeons about the concept of opinion leadership largely unknown but also the relative importance of opinion leaders compared with other influences on clinical practice is yet to be established. Therefore, we conducted this study of Australian surgeons to investigate the concept of opinion leaders in surgery, specifically to determine surgeons’ own views of opinion leadership and those attributes that confer status as an opinion leader. Our study was conducted through the State Committee of the Royal Australasian College of Surgeons in New South Wales (NSW), the most populous state in Australia.

METHODS

QUESTIONNAIRE DEVELOPMENT

This study was approved by the Central Sydney Area Health Service Ethics Review Committee (Royal Prince Alfred Hospital zone). Within our 12-page self-administered questionnaire, we adapted previous items and generated our own with input from practicing surgeons to examine aspects of opinion leaders as follows:

Identification of Opinion Leaders in Surgery

Participants first were given the following definition: “Clinical opinion leaders are health professionals who are nominated by their colleagues as being ‘educationally influential.’ Clinical opinion leaders in surgery are clinicians who have an influence on the education and surgical practices of their colleagues.” Participants were asked to estimate the number of opinion leaders in their specialty in the context of their hospital, NSW, and Australia. They then were asked to estimate the number of opinion leaders in surgery in general, again in each of the 3 contexts. Participants also were asked if they considered themselves to be an opinion leader.

Perceived Attributes of Opinion Leaders in Surgery

We expanded the original statements by Hiss et al to 22 possible attributes of opinion leaders, including type of surgical practice (n=3 items), academic contribution (n=4 items), professional contribution (n=4 items), expertise (n=3 items), teaching skills (n=5 items), and personal attributes (n=3 items). Participants were asked to rate the importance of each attribute in conferring status as an opinion leader in surgery (“very important,” “somewhat important,” or “not at all important”).

Views About Opinion Leaders

Participants next were asked to indicate their level of agreement or disagreement with each of 7 statements developed previously by Flottorp et al addressing support for the concept of opinion leadership (1 item), views of local vs national opin-
ion leaders (3 items), views about the influence of academics on surgical practice (1 item), and perceived ability to keep up-to-date (2 items). We provided a 5-point Likert scale (“strongly agree,” “agree,” “neutral,” “disagree,” and “strongly disagree”) for responses.

Influence of Opinion Leaders on Surgical Practice

To assess the influence of opinion leaders on clinical practice, we asked respondents to rate each of 15 potential influences (“very influential,” “somewhat influential,” and “not at all influential”).

Clinical Behavior

To explore clinical behavior, we included a scenario about situations of clinical uncertainty. Specifically, we asked the extent to which respondents would use each of 9 sources of information “to assist your surgical decision-making when faced with a difficult or unfamiliar surgical problem.” Three response categories were provided (“highly likely,” “somewhat likely,” and “would not use”). Two items referred specifically to opinion leaders, namely, “consult a surgical colleague whom you know personally” and “consult a surgical colleague whom you don’t know personally.”

Our questionnaire also ascertained surgeons’ personal and professional characteristics.

SURVEY ADMINISTRATION

A random sample of 600 fellows of the Royal Australasian College of Surgeons in NSW was selected from their database, using the SAS statistical software.22 Fellows were considered to be ineligible if they had retired from surgical practice, had died, were no longer residents in NSW, were on extended leave for more than 6 weeks, were unable to be located, or had contributed to the development of survey questions.

In August 2001, surgeons were sent an introductory letter about the study in advance of the main survey, in order to increase the response rate.23 Nonresponders received a reminder letter on day 16, followed by a second copy of the questionnaire on day 28. By day 45, a surgical peer telephoned remaining nonresponders to request return of the questionnaire. A third copy of the questionnaire was mailed as required, and a final reminder letter was sent on day 60.

STATISTICAL ANALYSIS

Frequencies were generated and proportions were calculated. Independent χ² tests and t tests were used to assess differences between groups in categorical and continuous outcomes, respectively. Fisher exact test was used for categorical outcomes in which expected cell frequencies were less than 5. Wilcoxon signed rank tests were used to compare median estimates of numbers of opinion leaders in respondents’ own hospitals, the state, and nationally.

To assess independent predictors of study outcomes, logistic regression analysis was performed. Variables found to be significant or near significant (P<.25) in univariate analysis were entered simultaneously into a logistic regression model. Potential predictor variables then were eliminated in order of least significance using a manual backwards stepwise approach.24 Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated. The SAS statistical software was used for all analyses.22

SAMPLE SIZE

We required a sample size of 400 for 95% CIs to be within 5% for most categorical prevalence estimates. Assuming an eligibility rate of 90% and a response rate of 75%, we anticipated receiving 405 completed questionnaires from a sample of 600.

RESULTS

Of 600 surgeons, 57 (10%) were ineligible to participate (35 retired, 7 were not a surgeon, 6 were on extended leave, 5 were uncontactable, 3 were deceased, and 1 contributed to the questionnaire development). We received 418 completed questionnaires from 543 surgeons (77% response). The response rate for ophthalmic surgeons (45%) was significantly lower than that for all other types of surgeons combined (85%) (χ²=50.0, P<.001). No other characteristics of nonrespondents were available to assess response bias. Characteristics of participating surgeons are given in Table 1. Participants who indicated they were general surgeons (n=128) or who did not nominate a surgical specialty (n=5) were
considered to be “general surgeons” (n = 133, 32%). Those indicating a surgical specialty or subspecialty affiliation were considered to be “specialist surgeons” (n = 285, 68%).

IDENTIFICATION OF OPINION LEADERS IN SURGERY

Most respondents were unable to identify an opinion leader in their own hospital, in their own specialty or in surgery in general (Table 2). Within respondents’ own specialty, the estimated number of opinion leaders at their own hospital (median, 1) was significantly fewer than for NSW (median, 4) or Australia in general (median, 9) (P < .001 for both). For surgery in general, the median estimated number of opinion leaders was significantly fewer for the respondents’ own hospitals (median, 0) than for NSW (median, 5) or for Australia (median, 10) (P < .001 for both).

Eighty-eight respondents (21%; 95% CI, 17%-25%) considered themselves to be an opinion leader. Older surgeons (< 35 years, adjusted OR, 1.00; 35-44 years, OR, 3.3; 45-54 years, OR, 8.5; 55-64 years, OR, 6.9; and ≥ 65 years, OR, 12.8) and those working in teaching hospitals (adjusted OR, 2.5) were independently and significantly more likely to self-identify as an opinion leader.

PERCEIVED ATTRIBUTES OF OPINION LEADERS IN SURGERY

Table 3 gives participants’ ratings of 22 possible attributes of opinion leaders. Attributes rated as “very important” by more than 70% of respondents comprised 8 items relating to expertise and teaching skills. Seven of these were attributes from the original questionnaire by Hiss et al.10 One additional item, namely, being “familiar with scientific evidence underpinning surgical practice,” was rated as “very important” by 85% (95% CI, 81%-88%). The items by Hiss et al relating to personal attributes were the third highest ranked group of items. Professional contributions to surgery received the lowest ratings.
VIEWS ABOUT OPINION LEADERS IN SURGERY

Most respondents (88%; 95% CI, 84%-91%) “strongly agreed” or “agreed” that “colleagues” could influence them to change their practice (Table 4). Significantly fewer agreed that “good academics in surgery” could influence them to change their practice (65%; 95% CI, 60%-70%) ($\chi^2 = 67.9$, $P < .001$, McNemar test).

Significantly more respondents agreed that there were fewer opinion leaders locally in surgery (42%; 95% CI, 38%-47%) than nationally in surgery (38%; 95% CI, 34%-43%) ($\chi^2 = 4.4$, $P = .04$, McNemar test) (Table 4). Only 10% (95% CI, 8%-14%) doubted their clinical practice was concordant with best evidence (Table 4). There were no significant associations between indicating this view and demographic characteristics of respondents. However, those who doubted that their clinical practice was concordant with best evidence were significantly less likely than other respondents to approach a surgical colleague whom they did not know personally for information at a time of clinical uncertainty (9% vs 20%) ($P = .04$, Fisher exact test).

INFLUENCES ON SURGICAL PRACTICE

Surgical training was the most highly ranked influence on surgical practice (71%; 95% CI, 66%-75%) (Table 5). By contrast, opinion leaders ranked sixth highest. Significantly fewer rated opinion leaders as “very influential” compared with surgical training ($\chi^2 = 82.0$, $P < .001$), postgraduate training ($\chi^2 = 47.8$, $P < .001$), or peer-reviewed surgical literature ($\chi^2 = 7.2$, $P = .007$) (McNemar test for all). Opinion leaders were rated as “very influential” by significantly more respondents compared with local colleagues ($\chi^2 = 5.1$, $P = .02$), clinical audit ($\chi^2 = 13.6$, $P < .001$), undergraduate education ($\chi^2 = 16.5$, $P < .001$), or clinical practice guidelines ($\chi^2 = 21.4$, $P < .001$) (McNemar test for all).

There was no association between rating opinion leaders as “very influential” and respondents’ sex ($\chi^2 = 0.05$, $P = .82$), type of surgeon ($\chi^2 = 0.004$, $P = .98$), location of practice ($\chi^2 = 0.03$, $P = .85$), or type of hospital ($\chi^2 = 0.39$, $P = .53$). However, younger surgeons (<35 years, adjusted OR, 1.00; 35-44 years, OR, 1.3; 45-54 years, OR, 0.6; 55-64 years, OR, 0.5; and ≥65 years, OR, 0.8) and those who did not self-identify as an opinion leader (adjusted OR, 1.8) were independently and significantly more likely to rate opinion leaders as “very influential.”

CLINICAL BEHAVIOR

When faced with a difficult or unfamiliar surgical problem, most participants (79%; 95% CI, 75%-83%) indicated they would be “highly likely” to consult a surgical colleague known personally by them (Table 6). Significantly fewer would be “highly likely” to consult a surgical colleague whom they did not know personally (10%; 95% CI, 7%-13%) ($\chi^2 = 283.1$, $P < .001$, McNemar test).

This study is the first to examine surgeons’ views of the concept of opinion leadership in surgery. Although the criteria developed by Hiss and colleagues to identify opinion leaders were confirmed by the responses of surgeons in our sample, a surgeons’ inability to identify local opinion leaders from among their hospital peers caution against hasty pursuit of hospital-based opinion leaders to promote research transfer in surgery. Our findings suggest that surgeons are able to identify colleagues with a national profile who can influence the education and surgical practice of their peers, however.

<table>
<thead>
<tr>
<th>Table 4. Respondents’ Attitudes to Opinion Leaders in Surgery*</th>
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</thead>
<tbody>
<tr>
<td>Attitude</td>
</tr>
<tr>
<td>Although it is difficult to keep up-to-date, I believe I do a reasonably good job</td>
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<tr>
<td>There are colleagues who influence me in such a way that I think of changing my practice (and sometimes do)</td>
</tr>
<tr>
<td>Good academics in surgery can influence my practice</td>
</tr>
<tr>
<td>There are few opinion leaders locally in surgery</td>
</tr>
<tr>
<td>There are few opinion leaders nationally in surgery</td>
</tr>
<tr>
<td>I am more easily influenced by local than national opinion leaders</td>
</tr>
<tr>
<td>I often doubt that my clinical practice is concordant with best evidence</td>
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</tbody>
</table>

*Data are given as number (percentage).

<table>
<thead>
<tr>
<th>Table 5. Respondents’ Ratings of Potential Influences on Their Surgical Practice*</th>
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</thead>
<tbody>
<tr>
<td>Influence</td>
</tr>
<tr>
<td>Surgical training</td>
</tr>
<tr>
<td>Postgraduate courses</td>
</tr>
<tr>
<td>Peer-reviewed surgical literature</td>
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<tr>
<td>Conferences</td>
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<tr>
<td>Clinical practice guidelines</td>
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<tr>
<td>Clinical audit</td>
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<tr>
<td>Undergraduate education</td>
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<tr>
<td>Hospital policies</td>
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<tr>
<td>Costs to the health system</td>
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<td>Personal financial interests</td>
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<tr>
<td>Mass media</td>
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*Data are given as number (percentage).
Our high overall response rate invites confidence in the validity of our results. However, the fact that we had a low response from ophthalmic surgeons cautions against the generalizability of our findings among this specialist group.

The agreement among respondents (88%) that “there are colleagues who influence me in such a way that I think of changing my practice (and sometimes do)” suggests salience of the theoretical concept of opinion leaders to surgeons. As elsewhere, however,21,23 respondents to our survey estimated few opinion leaders. Most respondents could not identify an opinion leader in their own hospital, in their own specialty, or in surgery in general. However, they could identify significantly more opinion leaders from the state in which they practiced and at the national level. It is unclear whether this finding relates to the larger denominator from which the opinion leaders could be drawn, to greater perceived influence of experts with a statewide or national profile, or simply a reluctance to ascribe special influence to coworkers in the same institution. When asked whether they were more influenced by local than national opinion leaders, there was no clear majority view among respondents. Strategies using opinion leaders have, to date, typically operated at the local level, with influential health professionals charged with changing the clinical practice of their hospital peers.15,17-20 Given the increasing availability of teleconferencing and videoconferencing, evaluation of the role of national opinion leaders to promote uptake of research findings in surgery appears timely.

As identified originally by Hiss and colleagues,10 attributes rated as “very important” by more than 70% of respondents in our study also related to surgical expertise and teaching skills. Personal qualities were ranked third highest. Academic and professional contributions ranked as the least important attributes of opinion leadership. Our finding that respondents in this study rated characteristics of opinion leaders consistently with the criteria of Hiss et al suggests that this original instrument has face validity for the concept of opinion leadership among surgeons. However, the usefulness of this questionnaire in identifying opinion leaders in actual practice remains to be tested.

Surgeons who were queried in postgraduate training courses were perceived by most respondents as being “very influential” on surgical practice. Although significantly fewer rated opinion leaders as “very influential,” these were rated significantly higher than other conventional approaches to promote evidence-based practice, namely, clinical practice guidelines and clinical audit. As clinical audit, involving review of summary service provision and outcome data and comparison with agreed standards, is a mandatory component of continuing medical education for surgeons in Australia,29 our finding that only 27% of respondents thought this activity was useful warrants further investigation. When asked about times of clinical uncertainty, however, most respondents indicated they would consult a surgical colleague whom they knew personally. Significantly fewer would consult a surgical colleague whom they did not know personally. These results affirm the perceived value of local networks in providing information to assist difficult clinical decision-making. However, the role of local colleagues in providing unsolicited support or to disseminate information unrelated to the care of specific patients requires further investigation. To date, little is known about specific influences on surgical practice. One study27 found that French surgeons rated informal meetings and exchanges second only to personal experience as the most important sources of medical information. Furthermore, when reading the literature, the reputation of the author of an article was considered more influential than the methodological rigor of a study.27 While confirming the potential role for opinion leaders in influencing their peers, such research highlights the need to ensure that opinion leaders are themselves fully conversant with relevant research. That respondents in our survey perceived opinion leaders as being familiar with the scientific evidence augurs well for their potential influence in research transfer. As awareness of the scientific evidence underpinning surgical practice has been shown to vary among surgeons,28 whether those who are considered to be opinion leaders are more conversant with evidence than those who are not warrants corroboration.

Our results provide further interesting insights into surgeons’ views about evidence-based practice. Only 10% indicated that they “doubt that their clinical practice is concordant with best evidence.” Yet, fewer than one half rate the peer-reviewed scientific literature as “very influential” on practice. Only 51% would use MEDLINE at a time of clinical uncertainty, and fewer (11%) would search the Cochrane Library,29 where systematic reviews are archived and readily retrievable. Although our study did not address surgeons’ awareness of or access

### Table 6. Sources of Information Used by Surgeons at Times of Clinical Uncertainty*

<table>
<thead>
<tr>
<th>Source</th>
<th>Highly Likely</th>
<th>Somewhat Likely</th>
<th>Would Not Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consult a surgical colleague known personally</td>
<td>330 (78.9)</td>
<td>77 (18.4)</td>
<td>5 (1.2)</td>
</tr>
<tr>
<td>Consult a textbook</td>
<td>256 (61.2)</td>
<td>135 (32.3)</td>
<td>20 (4.8)</td>
</tr>
<tr>
<td>Do a MEDLINE search and obtain relevant articles</td>
<td>215 (51.4)</td>
<td>133 (31.8)</td>
<td>56 (13.4)</td>
</tr>
<tr>
<td>Search the Internet</td>
<td>120 (28.7)</td>
<td>160 (38.3)</td>
<td>125 (29.9)</td>
</tr>
<tr>
<td>Browse through some journals but not do a formal literature search</td>
<td>82 (19.6)</td>
<td>181 (43.3)</td>
<td>135 (32.3)</td>
</tr>
<tr>
<td>Consult a clinical practice guideline</td>
<td>78 (18.7)</td>
<td>172 (41.1)</td>
<td>142 (34.0)</td>
</tr>
<tr>
<td>Search the Cochrane Library</td>
<td>46 (11.0)</td>
<td>89 (21.3)</td>
<td>257 (61.5)</td>
</tr>
<tr>
<td>Consult a surgical colleague not known personally</td>
<td>41 (9.8)</td>
<td>185 (44.3)</td>
<td>181 (43.3)</td>
</tr>
<tr>
<td>Contact the Royal Australasian College of Surgeons or surgical society</td>
<td>7 (1.7)</td>
<td>54 (12.9)</td>
<td>342 (81.8)</td>
</tr>
</tbody>
</table>

*Data are given as number (percentage).
to specific resources for evidence-based medicine, these results suggest that, as in other medical disciplines, the work of the Cochrane Collaboration has yet to achieve its potential as a resource for surgeons.

In conclusion, although Australian surgeons support the concept of opinion leadership, they have difficulty identifying local colleagues whom they consider as fulfilling such a role. Further clarification of the differential roles of local and national opinion leaders and the specific surgical contexts in which each could be effective is needed before use of opinion leaders in surgery can be advocated. As timely transfer of research is needed to realize the full benefits of surgery for patients, such research should represent a priority.

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Views expressed in this article are those of the authors and not necessarily those of the Royal Australasian College of Surgeons.

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