

## ASEAN Movement in Radiology

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# Value-based radiology in Asia-Oceania: Current status and future directions

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The Asian Oceanian Society of Radiology (AOSR) is primarily a federation of 24 radiological organizations from Asia-Oceania (<https://theaosr.org>) with varied cultures, languages, population sizes, country-land areas, economies, and geopolitics. AOSR has no low-income country members [World Bank] [1]. The AOSR is made up of 10 lower-middle-income [1] (LMIC), 5 upper-middle-income [1] (UMIC) and 9 high-income [1] territory/country radiological societies and a few individual members. Radiology has been recognized as a contributor to increasing healthcare costs and must work towards reducing low-value care [2,3]. The understanding and practice of VBR is diverse amongst the AOSR society members [4], ranging from not being aware of the term to those who practice it [5].

In 2021, the AOSR leadership participated in the International Society for Strategic Studies in Radiology value-based radiology (VBR) strategic planning workshops. This provided (or proved to be) the impetus for the AOSR to formulate an action plan for advancing VBR in our region.

## 2022-2024: VBR Survey-Webinar-Workshop

### 2022 VBR Survey

The AOSR value-based radiology (VBR) survey was conducted from May 5<sup>th</sup> to June 30<sup>th</sup>, 2022, to assess the extent to which VBR was practiced and barriers encountered. The feedback on the survey was encouraging. For those who had not considered VBR, they were now aware, and interested in learning more about it whilst comments from open-ended questions provided useful insights.

The survey questions in English were approved by the AOSR Councilors and converted to an online Google Form. The AOSR office emailed the online survey link to member societies' administrative offices for distribution to their membership. For those with limited access to the Google form, they could respond to the survey in Microsoft Word document. Those responding on behalf of a radiological organization were to answer as objectively as possible to reflect their respective practices. As this was also meant to generate VBR awareness, there was no limitation on the number of respondents, even if they came from the same center of practice. Responses were accepted from any individual in the region.

The survey questions pertained to clinical practice of multidisciplinary teams (MDTs), reducing duplicate and redundant follow-up examinations, appropriate use criteria (AUC), a clinical decision support system (CDSS), key performance indicators (KPIs) to measure patient outcomes related to modalities and procedures, and communications with various stakeholders.

Questions were designed in a "yes or no" format, on a Likert scale or with free text answers covering four domains: barriers to establishing MDTs, systems preventing duplicate/redundant examinations, KPIs for patient outcomes and provision of lay language reports to patients. Respondents were contacted for clarifications, if their answers were ambiguous or for those from the same centers with apparently incongruous answers.

**Table 1: Respondents Territory/Country Distribution**

Territory/Country	No. of Respondents
<b>High Income</b>	
Australia	2
Chinese Taipei	1
Hong Kong SAR	4
Japan	4
Oman	1
Singapore	1
South Korea	2
<b>Upper-Middle-Income</b>	
Indonesia	8
Kazakhstan	1
Malaysia	1
Thailand	1
<b>Lower-Middle-Income</b>	
Bangladesh	3
India	3
Mongolia	1
Myanmar	11
Papua New Guinea	1
Philippines	1
Uzbekistan	1
Vietnam	1
<b>Total</b>	<b>48</b>

Respondents were informed that the report of the survey findings would be on the condition of anonymity apart from their region/country of origin. The survey results were tabulated on Microsoft Excel. No statistical analysis was required, as this was primarily a cross-sectional study of prevalence of practice patterns.

There were 48 respondents (45 senior and 2 junior radiologists, 1 resident) from 19 different countries/regions/territories (Table 1). Fifteen were from high-income (HIC), 11 from upper middle-income (UMIC) and 22 from lower-middle-income countries/territories/regions (LMIC). Eighteen of our 24 radiological societies participated

in the survey. The countries/regions/territories represented about 2.58 billion people in 2022 (<https://www.worldometers.info/world-population/>). Six responded on behalf of their societies. Respondents were from a variety of institutions – government, academic, private centers and were located in cities or larger towns.

Survey findings indicated variable VBR awareness, understanding and practice amongst AOSR members (Table 2). Many respondents worked in practices that had MDTs, collaborating with various medical specialties with the majority serving to understand each other’s needs. Only about half of the respondents (about half each as well within HICs and LMICs) had systems in place to prevent duplicate and redundant follow-up examinations. Access to imaging was available within the center but dropped dramatically once it was outside the center.

**Table 2: AOSR Value-based Radiology Survey Results Summary**

Multidisciplinary Teams (MDTs)	Yes	No	Total	
Your practice has MDTs involving radiologists, referring practitioners and other relevant personnel to:				
Understand each other's needs	45 (94%)	3 (6%)	48 (100%)	
Improve response to gaps in healthcare management	35 (73%)	13 (27%)	48 (100%)	
Optimize utilization of existing resources	35 (73%)	13 (27%)	48 (100%)	
Develop resources of the future	30 (63%)	18 (38%)	48 *(101%)	
<b>Preventing Duplicate and Redundant Follow-up Examinations</b>				
There are systems in place to prevent duplicate or redundant follow-up examinations in your department/center or region or country. If yes, please answer the following:	23 (48%)	25 (52%)	48 (100%)	
There is access to patient imaging and reports within a center	23 (100%)	0 (0%)	23 (100%)	
There is access to patient imaging and reports within a state/region of the country	11 (48%)	12 (52%)	23 (100%)	
There is access to patient imaging and reports within the country	10 (43%)	13 (57%)	23 (100%)	
Patients have a record book to log their examinations	10 (43%)	13 (57%)	23 (100%)	
There are other systems in place for reducing duplicate or redundant examinations. If the answer was yes, briefly state what these systems were [1]:	7 (30%)	16 (70%)	23 (100%)	
<b>Appropriate Use Criteria (AUC)</b>				
Does your center use any form of AUC to guide selection of the most appropriate imaging examination to answer the clinical question? If yes, give details [2]:	22 (46%)	26 (54%)	48 (100%)	
Do you involve non-radiologist clinicians/specialists in developing AUC including 'no need to image'?	31 (65%)	17 (35%)	48 (100%)	
<b>Clinical Decision Support System (CDSS)</b>				
Does your center use any form of CDSS? If yes, please elaborate briefly [3]:	3 (6%)	45 (94%)	48 (100%)	
<b>Key Performance Indicator/s (KPIs) that measure patient outcomes in relation to modalities and procedures</b>				
Do you work with or are you aware of healthcare stakeholders working with imaging industry partners to develop software/apps that gather information on KPIs? If yes, please give brief details [4]:	8 (17%)	40 (83%)	48 (100%)	
Will you be interested to work with your non-radiology colleagues to develop KPIs?	45 (94%)	3 (6%)	48 (100%)	
	<b>**Agree</b>	<b>Neutral</b>	<b>**Disagree</b>	<b>Total</b>
Key stakeholders should work with imaging industry partners to develop relevant KPI software	34 (71%)	11 (23%)	3 (6%)	48 (100%)
At equipment purchase, there should be appropriate training related to deployment and interpretation of information provided by the KPI software	39 (81%)	5 (10%)	4 (8%)	48 *(99%)
<b>Communications and Lay Language Reports</b>				
There should be training to enable radiologists to improve the ability to communicate with patients	40 (83%)	3 (6%)	5 (10%)	48 *(99%)
There should be training to enable radiologists to improve the ability to communicate to mass media	34 (71%)	11 (23%)	3 (6%)	48 (100%)
There should be a specially designated person/s for communication with mass media	41 (85%)	3 (6%)	4 (8%)	48 *(99%)
Research on direct patient communication is important even in radiology	40 (84%)	5 (10%)	3 (6%)	48 (100%)
A tool/apps developed to provide patients with disease/imaging specific information is important	38 (79%)	8 (17%)	2 (4%)	48 (100%)
A tool/apps developed to provide patient-friendly decision support will improve radiology-patient interactions and understanding of what imaging/procedure is most appropriate	38 (79%)	8 (17%)	2 (4%)	48 (100%)
Patients should have access to their imaging/procedure reports in lay language	20 (42%)	15(31%)	13 (27%)	48 (100%)
	<b>Yes</b>	<b>Do not know or not sure</b>	<b>No</b>	<b>Total</b>
There is a specially designated person/s within your radiology organization/center for communication with mass media	17 (35%)	11(23%)	20 (42%)	48 (100%)
There is research on direct patient communication in your center/area/region/country?	9 (19%)	14 (29%)	25 (52%)	48 (100%)

\*Rounding reason; \*\*sum of the strongly agree/agree and strongly disagree/agree responses

1. A central clinical management system with a pop-up prompt once it detected duplicate inputs within a specified time frame requiring a reason for the order entry; national health insurance system that required pre-approval; hospital management cost and quality control team decision; scheduling and archive comparison.

2. 14 were clinical and other referral guidelines (developed in-house, own health ministry, own professional body), local and foreign (American College of Radiology, European Society of Radiology, National Comprehensive Cancer Network, National Institute for Care and Excellence, neighbouring country); 3 were specific clinical presentations and/or departments for example in ER, for stroke & backpain; 4 were related to vetting each request for appropriateness: short interview with patients/check logbook, vetting requests to make decision on appropriate imaging, direct discussion with radiologist; 1 did not give further details.

3. Artificial intelligence CDSS tool for stroke and specific disease conditions which informs both radiologists and referring physicians to aid in diagnosis and treatment

4. Collection of KPIs (such as turnaround time, stroke outcome) by government hospital network, use of the ACR as reference, use of commercial software (RadimetricsTM), and development within a university AI department.

Overall, nearly half of the respondents used any form of AUC: 40% HIC, 45% UMIC, 50% LMIC. A few respondents considered personally vetting for appropriateness, a form of AUC. Most of the others used locally developed clinical practice guidelines, established foreign guidelines or a combination of the two. An overwhelming majority of our respondents did not have any CDSS integrated into the radiology order entry system.

Only a fifth of respondents were aware of or working with industry partners to develop software applications that gather KPIs for measuring patient outcomes related to modalities and procedures. However, an overwhelming majority indicated interests in working with non-radiology colleagues to develop such software. Most of the respondents agreed that key stakeholders should work with imaging industry partners to develop relevant KPIs and that there should be appropriate training at the time of equipment purchase for deployment and interpretation of the KPIs.

Factors like manpower shortage, lack of money and time, restrictive policies including data privacy laws and lack of unified national policies, self-centered physician behaviors as well as poor communications between stakeholders and poor patient compliance, were consistently mentioned as barriers across the domains surveyed (establishment of MDTs, usage of KPIs for patient outcomes and reduction of duplicate examinations).

For MDTs, other barriers were the lack of incentives from hospital administration for non-interpretive activities and the lack of interest and teamwork training amongst physicians. Many were skeptical about the use of KPIs, as it was perceived as an imperfect tool that could create conflicts among healthcare professionals.

The absence of and deficiencies in information technology (IT) were cited as major barriers to prevent duplicate examinations. Incompatible systems and privacy laws prevented cross-accessibility. Physicians' failure to review available records required additional pop-up alerts in the order entry system. Patients who registered with different names confounded the problem. In manual systems,

physicians' failure to take a complete history and patients' inability to keep track of even their own logbook were other factors. Another detractor was the radiologists' lack of authority in denying seemingly duplicate or redundant examinations in some regions.

For some of our respondents, an insurance system that required pre-approval helped reduce duplicate and redundant examinations. However, such an insurance system could result in denial of legitimate urgent requests if the same imaging modality was requested within a defined time period, even if it was meant for different anatomical regions or clinical indications. Such system imperfection had resulted in user dissatisfaction and led physicians to seek ways to bypass the system.

The respondents agreed with the importance of research in direct patient communication and had a high level of interest in improving their skills in communicating with patients. While many also acknowledged the importance of engaging mass media, most preferred a specially designated person for this function. Many also agreed it was important to develop digital applications with disease/imaging specific information to improve radiology-patient interactions and allow patients to understand the most appropriate imaging/procedure for their conditions.

Respondents were ambivalent about the provision of lay language reports to patients with less than half agreeing to the idea regardless of their country's economic status or their level of agreement when asked to give their comments. A few respondents indicated that directly talking to the patients about their findings could obviate a lay language report especially where the reporting language and the spoken languages were different.

Reasons in support of lay language reports were broadly categorized into 'patients' right to a report in a language they could understand' and 'improved patient outcomes'. Better patient outcomes might result from a better understanding of their condition, timely access that allayed patient anxiety and improved patient

satisfaction with overall better compliance especially for those needing to travel great distances to urban centers to seek medical treatment.

Reasons against the use of lay language reports were possible poorer patient outcomes, increased medicolegal risks and heavier radiologist workload from providing 2 reports per patient. Reduced report accuracy as a result of oversimplification and imprecise translation into the vernacular language raised the fear of medicolegal risks. A lay language report with complex findings or a diagnosis of malignancy may cause undue anxiety that might otherwise have been tempered during consultation with their primary physician. Patient outcomes might also be worse if they misunderstood their lay language report and decided to self-treat, sought alternative medicine, and defaulted follow-up, which might lead to radiologist with referring non-radiologist physician conflict.

The data from the survey is small with a skewed sample size. The AOSR also could not dictate how each society member promoted the survey to its own membership. As the survey was in English, only those proficient in English responded whilst some responses were from society leadership only. Most of the respondents were also from urban hospitals.

There was an initial attempt to see if there were differences in responses from LMICs and HICs but these were not significant because of the small and skewed sample size. Anecdotally, unexpected findings were in the level of agreement to provide lay language reports and a similar lack of a system to reduce duplicates or that proportionately more of LMICs seemed to have some form of AUC compared to HICs. These seeming discrepancies may be related to how having IT systems does not automatically help reduce duplicates, and also on how each respondent defined AUC. HICs might consider AUC as specific software, whilst manual systems amongst LMICs were considered a form of AUC. Commonalities highlighted were the relationship of the radiologist with the non-radiologist physician as well as communication difficulties with perceived or real inability for the radiologist to be heard and respected. Such insights from the information provided the AOSR guideposts to chart the next steps.

## 2023 The Connected Radiologist Webinar

The graphic is a vertical banner for the AOSR Value Based Radiology Webinar. At the top is the AOSR logo. Below it, the title 'AOSR Value Based Radiology Webinar' is followed by the theme 'The Connected Radiologist: Do More & Be More' and three bullet points: 'Communication with patients and referring providers', 'Connecting with our profession', and 'Connecting with our communities'. It states 'Hear from 3 dynamic radiologists. Please come with Questions for the Q & A and Panel Discussion following the talks'. The date '17TH JAN' 2023' is prominently displayed with time slots for GMT+8, IST, and USA Eastern Time. A 'CLICK HERE' button with a cursor icon and the URL 'https://aosr.vidocto.com/' are at the bottom left. The right side of the graphic lists the speakers and their topics: Dr. Geraldine McGinty (The Visible Radiologist), Dr. Chantsalsuren Galbaatar (Engaging Colleagues in Medicine), and Dr. Angelica Robinson (Captivating Communicator). It also lists the Moderator, Dr. Evelyn Ho, and the Guest Panellist, Dr. Charles Goh. Key sections include 'WHY ATTEND?' (radiologists becoming invisible), 'FIND OUT' (three points on communication and leadership), and 'LEARNING OUTCOME' (effective communication with patients and colleagues).

To this end, a webinar was organized in January 2023 on how to be confident beyond the radiology reporting room, promoting communication and collaboration of radiologists with other medical disciplines, patients and having meaningful community engagement. Dr Chantsalsuren Galbaatar, spoke on ‘Engaging Colleagues in Medicine’, giving her experience on how she juggled time as a radiologist and led the activities as CEO of the Mongolian Medical Women’s Association. Dr Geraldine McGinty, a past American College of Radiology president spoke on ‘The Visible Radiologist’ whilst Dr Angelica Robinson from University of Texas shared her experience and “how to” on community engagement in her talk on ‘Captivating Communicator’. A guest panelist Dr Charles Goh from Singapore joined the discussion. The webinar ended with a very robust panel discussion.

Feedback was encouraging with 78% and 22% stating the webinar was very useful and useful, respectively. There were 246 registrations and 101 who attended live, mostly from 11 countries/region in Asia-Oceania as well as a handful of attendees from Lithuania, Saudi Arabia and Portugal.



## **2024 VBR Track and Workshop: Radiology Leadership Intensive: ‘How to Lead the Way in Becoming a Visible Radiologist?’**

At the recently concluded Asian Oceanian Congress of Radiology 2024 (AOCR2024) in March, Taipei, a VBR track with didactic lectures followed by a breakout session with small groups and ensuing wrap up session was conducted. The AOSR recorded its appreciation to Dr Geraldine McGinty and Dr Frank J. Lexa for leading the way in this track and workshop. ‘Why every radiologist must be a leader’, ‘Negotiations – it’s more than just money’ and ‘Speaking up and leading change without being seen as a troublemaker’ were the focus. For the breakout sessions, participants were given scenarios to play out and discuss.



*The various small groups regrouped for a wrap up session and discussion followed by a group photo for memories of a very productive workshop.*

### **What Next? Future Directions**

One of our favorite quotes is attributed to Lao Tzu, ‘The Journey of a Thousand Miles Begins with A Single Step’. Without labelling our activities as such, we had already taken our first steps into VBR. In 2021, the AOSR Emerging Trends Committee embarked on developing and adopting disease specific structured reporting templates in more than 1 language (soon to be available on <https://theaosr.org/>) amongst the membership to ensure the patient’s results would be communicated consistently and provided all the essential information to the management care team. AUCs should be promoted and multidisciplinary development of AUCs encouraged.

In the same year, AOSR officially launched AsiaSafe [6] with its website <https://asiasafe.org/>. AsiaSafe originally started with a vision for building a radiation safety culture but early on had its mandate extended to other aspects of safety including MR safety and even contrast safety. Both of these ventures ensure better outcomes for the patient – adding value to radiology and healthcare in our region.

After the 2022 AOSR VBR survey, the results of the survey were shared with the society membership through the AOSR President's Roundtable. Despite the cultural differences, widely varying resources and language differences, it was agreed that all could improve communication skills with patients and other stakeholders in healthcare, and even amongst the other members within an MDT. A train-the-trainers for leadership and communications might be an area to work on, so that these can be replicated in the various languages of each territory/region and have a wider reach. Consistent and persistent efforts which are resource stratified and practical in our region will be needed. In the meantime, a VBR track is in the pipeline for the AOCR2025 (Chennai, India) in January 2025.

Our revamped AOSR website <https://theaosr.org/> in 2024, would also be useful for promoting and sharing resources and ideas. We hope that through our various efforts, AOSR can assist the radiology communities within the Asian-Oceanian region to develop future thought leaders, who will contextualize global best practices to be implemented in their respective health systems, and thereby increase the value of radiology and radiologists.

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