

出國報告（出國類別：其他）

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摘要

影像醫療器材製造已有由歐美移向亞洲的趨勢，新興市場亦以亞洲為主。日本(10.3%)為僅次於美國(39.5%)之全球第二大醫療器材市場，其需求與技術皆領先亞洲各國，故本次公差赴日本參加 2014 放射學研討會暨醫學影像國際技術展覽會，藉以蒐集相關資訊並掌握市場趨勢與競爭者動態。

該研討會聚焦於放射醫學影像相關主題，會議內容依各類放射影像儀器(X-光、CT、MRI、PET、SPECT)搭配其不同的臨床應用(腦、胸腔、乳房、肝...等)，展開成許多的次研討會及主題討論，與本所之 X 光與分子影像等放射影像高階醫材儀器系統、醫學影像分析處理技術研發有密切關聯。

本次公差主要針對低劑量放射影像醫材系統及相關臨床應用趨勢進行資訊蒐集。由於近年來日本人民對輻射曝露劑量議題日益重視及醫療放射資訊透明化的趨勢，如何朝輻射劑量正當化、最適化、病人受益的目標前進為該會議相當重要的議題，此亦與本所低劑量成像技術之研發方向相符。

本次研討會中發表的內容都相當務實(例如：臨床現象原因的探討、例行操作中的參數影響、長時間追蹤統計的結果)，數據具參考價值。最後順道至京都科學公司參訪，針對計畫需求進行客製化假體規格討論，並攜回設計方案與相關資料供計畫同仁參考。

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一、目的

執行特別額度計畫「泛用型 3D 放射造影儀技術開發」，為蒐集低劑量成像技術與 X 光攝影儀臨床應用之最新發展資訊，參加 2014 日本放射學研討會 (Japan Radiology Congress 2014) 暨醫學影像國際技術展覽會 (The International Technical Exhibition of Medical Imaging 2014)。藉由了解亞洲最大(全球第二) 醫療器材市場的趨勢走向及關注議題，將對本計畫系統開發之競爭優勢分析與後續規劃推展有莫大助益。本次赴日亦安排至京都科學公司參訪，該公司專精於各式醫學影像造影測試/驗證用假體製作，並針對本計畫需求進行客製化規格討論。

二、過 程

(一) 行程：

日期	地點	內容
4 月 9 日	台北 至 日本 橫濱	去程
4 月 10~ 4 月 12 日	日本 橫濱	參加日本放射學研討會 (JRC 2014) 暨醫學影像國際 技術展覽會(ITEM 2014)
4 月 13 日	橫濱至京都	上午：參加研討會 下午：前往京都
4 月 14 日	日本 京都	參訪京都科學公司
4 月 15 日	日本 大阪 至 台北	返程

(二)參加 2014 日本放射學研討會

2014 年 4/10~4/13 於日本橫濱舉辦的 Japan Radiology Congress (JRC)是由日本的放射線醫學會(JRS)、放射技術學會(JSRT)、醫學物理學會(JSMP)聯合舉辦的大型會議，議程如附錄。該會議一年共有春季與秋季兩場，春季規模較大。今年 2014 JRC 包含第 73 屆放射線醫學會年會、第 70 屆放射技術學會技術研討會、第 107 屆日本醫學物理學會技術研討會。根據官方統計數據，口頭發表 1,038 篇，展示發表 485 篇，與會人數約 11,823 人(包含醫師、技師、醫療從業人員、研究人員/學生、廠商)。PACIFICO YOKOHAMA 會場(如圖一所示為各館交界處)包含會議中心、橫濱洲際大飯店、橫濱國立會議廳(展示發表)及展覽廳(ITEM 展場，如圖二)四區，此次公差主要針對放射醫學影像臨床應用與實務技術資訊蒐集為主。與會心得見心得(一)。

Expert Lectures 時段作者選擇「醫療資訊系統標準化」單元，由京都醫療科學大學細羽実教授介紹醫學影像的電子保存與醫療情報院間共有的標準化進程，包含標準化實現的技術及運用的問題。Educational Lecture 時段作者選擇 1. 史丹福大學 Craig S. Levin 教授介紹

RF-transparent PET 技術用於 PET/MRI 同時造影。2. 杜克大學 Ehsan Samei 教授介紹乳房造影系統評估的新視野。Overseas Lecture 時段作者選擇 1. 「肺癌造影」由荷蘭 Meander 醫學中心 Cornelia M. Schaefer-Prokop 教授主講(她是胸腔放射學專家，現任歐洲胸腔影像學會 (European Society of Thoracic Imaging)主席)。2. 「肌肉骨骼放射學的影像導引程序」由美國愛荷華大學 Kenjiro Ohashi 教授主講。聯合研討會時段作者選擇「醫療保健和放射技術在缺血性心臟疾病的調和」，JSRT 與 JCS (Japanese Circulation Society)主要目的在於促進循環器領域(心血管)醫生對各類心血管醫學造影方式之瞭解，並能於診斷與治療階段發揮其功效。聆聽演講之心得見心得(二)~(三)。

Symposium 方面作者選擇「CT 劑量：dose index registry(DIR)的挑戰」，因應日本人民對曝露劑量議題日益重視與放射資訊的透明化，討論與 DIR 有關的趨勢、意義與可能性，主辦單位邀請京都醫療科學大學的石垣陸太博士，以肺部篩檢用 CT 的觀點來介紹；日本國立國際醫療研究中心醫院的篠崎雅史，以臨床 CT 的觀點來介紹；日本國立癌症研究中心東病院的野村惠一，介紹 CT 劑量評估的最新技術。另外，亦邀請日本醫學影像與放射系統工會 (JIRA)放射與劑量委員會主席伊藤友洋博士，介紹 CT 國際標準與法規的趨勢。聆聽演講之心得見心得(四)。

口頭與展示發表方面，作者奔走於「X-ray Exposure Index」、「Image Evaluation」、「CT Iterative Reconstruction」、「Nuclear Medicine PET: Correction」、「Nuclear Medicine PET: Basic」、「Nuclear Medicine CZT Semiconductor Detectors」等幾個主題中，由於會議嚴禁拍照，發表之摘要及資訊存查於實驗室供相關研究同仁參考與延伸搜尋。

(三)參加醫學影像國際技術展覽會

同會場 4/11~4/13 由日本醫學影像與放射系統工會(JIRA)，舉辦 The International Technical Exhibition of Medical Imaging(ITEM 2014)，該展覽會自 1988 年起即與 JRS、JSRT、JSMP 等年會同期舉行，匯集了日本最新的醫療成像系統與周圍配備。今年共有 163 家廠商設攤(歷年最高)，強調如江戶時代對西方世界開放橫濱港一般 Face to Faces, Face to communities, Face to the World(為此次標題)，並吸引 22,140 人參加此展覽。

由於展覽時間與研討會重疊，抽空針對幾家放射影像醫材系統及組件廠商進行資料蒐集。另外，亦了解該次展覽之新產品與新技術發表。詳細資訊整理與心得見心得(五)。

(四)參訪京都科學公司

研討會後順道安排至京都科學公司參訪。該公司成立於 1948 年，專精於各式醫學影像造影測試/驗證用假體製作，目前主要產品包括：64 種醫學影像用假體（主要為 X 光診斷、超音波診斷，也有少部分核醫、MRI、放射治療用假體）、126 種醫療照護訓練用擬人模型、57 種急救訓練用器材與模型、805 種人體構造、病理或動植物標本與模型及其他多種模型或教材。日本有眾多醫療單位或醫科大學採用其產品。本次參訪主要是針對計畫需求與原廠同仁進行客製化規格討論，詳細情況與心得見心得(六)。

三、心得

(一) 從此次會議的議程安排即可發現，分類很細，有許多次研討會及主題討論。以放射技術學會為例，每類放射影像儀器(X-光、CT、MRI、PET、SPECT)搭配其不同的臨床應用(腦、胸腔、乳房、肝...等)大都能找到對應的主題討論場次，且發表的內容都相當務實(例如：臨床現象原因的探討、例行操作中的參數影響、長時間追蹤統計的結果)，乍看之下有些失望，沒有大躍進的觀念及技術提出。但重新思考創新的意義，什麼是新？什麼是進步？在特定專門的領域裡，一群人將使用/測試/研究的經驗交流，所建立的一點一滴的經驗與知識，不就是進步創新的來源？回想張培仁教授曾提到企業產品技術的訓練場，東西開發出來了，仍要有人去用去回饋去改善，技術能力才能越磨越亮，最終才能展示出競爭實力。日本醫療市場為全球第二大(僅次於美國)，並為全球第八大醫療器材出口國，觀察其研究發表趨勢以務實技術探討為主，加上有多家系統廠商做為後盾，所研發之技術有落實產業的機會，值得我國及本所學習！

(二) 「醫療資訊系統標準化」單元詳細介紹日本醫療影像標準化的演進，從 1983 年 PACS (picture archiving and communication system)、ACR-NEMA，和經過 1989 年 IS&C(Information Systems & Computing)、1998 年線上電子保存 DICOM 規格、2001 年 IHE-J 起步、2003 年醫療資訊 network 基礎建設檢討會設置、2005 年醫療資訊 system 的安全管理 Guideline V1，2010 年厚生省開始標準規格制定。日本長期在推動醫療資訊標準化，期望利用醫療機關網絡的連結可將診療影像及檢查情報安全的交換(如圖三)，像過敏、服藥狀況等資訊掌握可確保病患安全(高齡患者過去病史可能遺忘)，另外，資訊亦可供統計與防疫等使用，且診療紀錄程序完全線上化，可將健保審查程序效率化，達提升醫療品質及降低醫療支出的目的。Educational Lecture 邀請 Levin 教授介紹 RF-transparent PET 技術，近年 PET/MRI 已成為強大的工具，可同時獲得分子、功能及軟組織結構等資訊，然而造價相當昂貴，至少 1 億 5 千萬元新台幣。Levin 教授團隊致力於設計能放置於任何現有 MRI 系統內的 PET 系統(仍可使用原內建的 RF 發射線圈)，設計架構如圖四，異於現今需大幅修改 MR 孔徑及將身體發射線圈放入 PET 環內的方式。另外，Samei 教授介紹不同乳房造影系統的影像診斷結果與特性，並提出複合式的評估指標來綜合其結果。上述兩位講者都是該研究領域先驅人物，教育課程安排具創新思維與前瞻技術的分享，加強臨床工作者與研究人員的激盪與交流。

(三) Overseas Lecture 「肺癌造影」單元 Schaefer-Prokop 教授談論肺癌影像新趨勢：1. 雖然在肺癌早期偵測方面 CXR(Chest X-Ray)效果不比 CT，然而仍需要改善去避免”現在回想起來也可見之遺漏的結節”，降低結構雜訊(骨組織去除之影像技術)及電腦輔助偵測(computer aided detection, CAD)技術持續地精進，已明顯改善了放射科醫生的表現。2. 肺癌分期目前遵循第七版 TNM classification，除探討新舊版的差異以及新版仍會有的限制，亦提出考量 PET 影像的參考價值。3. 判斷 solid 和 sub-solid(不需再追蹤)結節非常依賴由肺癌篩檢研究建立的知識，而在分期與管理偶然發現的結節的部分，CT 能扮演”imaging biomarker”的角色。2. 「肌肉骨骼放射學的影像導引程序」單元 Ohashi 教授介紹肌肉骨骼病變時的影像導引程序，種類包含關節造影、脊椎注射及活檢(biopsy)，部位包含肩部、髖關節、腳/腳踝等等，並強調與骨科、腫瘤科、病理科合作為 biopsy 成功的關鍵。在心血管醫學造影的聯合研討會上，印象較深刻的一個是 JA 廣島綜合醫院山口裕之醫生介紹心臟 CT 造影診斷缺血性心臟疾病的現況。冠狀動脈的狹窄程度可用來評估治療方法及風險程度，而動脈高度石灰化、輻射曝露及心律不整等問題可透過雙能量造影、迭代式影像重建技術及多列偵檢器來改善。至於冠狀動脈太狹窄造成無法判斷是否缺血的問題，可利用 CT 心肌灌注融合影像來協助。根據疾病的特徵選擇最適合的檢查方法是必要的。聆聽臨床醫學的報告有助於了解該類疾病現狀及困難點，快速建立概要性的觀念。

(四) 目前臨床 CT 劑量的評估指標(DIR)有 CTDI(Computed Tomography Dose Index)、DLP(Dose-Length Product)、SSDE(Size-Specific Dose Estimates)三種。在肺部篩檢用 CT 的情況：日本癌症致死率第一名為肺癌，因此，推動低劑量 CT 篩檢，篩檢目的為早期偵測病灶，方式是每年重覆對健康的個體篩檢。根據美國肺癌篩檢試驗 53,454 人(吸菸與吸二手菸者)的結果顯示，低劑量 CT 比胸腔 X 光檢查能降低 20%致死率。而日本超過 500 台醫療設施、合格醫生 1,372、每年超過 12 萬人參與肺部 CT 篩檢。雖然大規模採用肺部 CT 篩檢，但對於輻射劑量、影像品質與實務指引仍在研究中，日本本國的 DIR 也尚未建立，2014 年有 15 個地點開始進行 pilot study。在臨床 CT 的情況：DIR 系統(DoseWatch—GE 公司提供的軟體)的試用經驗分享，以胸腔檢查為研究標的(占各部位檢查之 24%)，利用抓取 GE 750 HD 和 SIEMENS Definition Flash 兩台 CT 儀器中 DICOM-RDSR 的 CTDI 與 DLP 數據，來統計劑量。國際標準提到 CT 劑量的警戒值 IEC 是 2 Gy(引起皮膚紅斑反應的門檻)，而 FDA 是 1 Gy；通知值於 AAPM 指引中有建議，但並無依日本人體質的最佳數據。該研究結果顯示兩儀器之 CTDI 通知值分別為 11.71 mGy 和 13.70 mGy；DLP 通知值分別為 477.65 mGy.cm 和 538.04 mGy.cm，未來期將相關資訊回饋至醫療資訊系統或診

斷報告中。**CT 劑量評估的最新技術**：劑量模擬—輸入 CT 影像獲得造影目標之材質種類與質量，建立 CT 造影系統之數學轉換特徵(如：X 光能譜分布、Bow tie 濾片厚度等)，直接以蒙地卡羅模擬計算出劑量分布。利用影像卡加速運算可於 10 分鐘內獲得結果。再經由 ROI 圈選可獲得器官吸收劑量，結合 DIR 數據與劑量模擬結果可以提供 X 光射束是如何照射及個體的曝露劑量為何。**CT 國際標準與法規的趨勢**：聯合國原子輻射效應科學委員會(UNSCEAR)及國際原子能總署(IAEA)報告，指出仍不清楚能產生足夠影像品質之最低劑量為多少，另有報告指出由 CT 檢查產生超出的輻射。因此，劑量管理是美國列出的行動之一。劑量紀錄的追蹤系統建立，包含管理單位—FDA/輻射控制計劃主任協會(CRCPD)的制度化推動、製造商—醫學影像技術聯盟(MITA 為 NEMA 的一個部門)對於劑量指標標準化的制訂與技術開發、使用者—美國放射學會(ACR)提倡促進使用劑量紀錄的追蹤系統。多個州法律已規定劑量需電子化紀錄、輻射報告需包含劑量紀錄等。相關標準規範 NEMA-XR25、IEC60601-2-44、DICOM Part3&16、IHE REM profile & Connecterson 可供參考應用，期朝輻射劑量正當化、最適化、病人受益的目標前進。

(五) 今年 ITEM 展覽之新產品與新技術整理分類如下：

1. 巡迴診察/急救用特殊數位 X 光攝影裝置：六濤公司提出一種急救用的造影床(圖五)，內含 43 cm × 130 cm 的大尺寸數位偵檢器，可一次照射獲得大範圍影像，不須多次照射可節省造影時間並降低劑量，適合用於重症患者或不容易擺位的小兒患者。搭載充電電池，可在室外或災害時使用。ELEKTA 公司提出傾斜抽換造影床板下的數位 X 光偵檢器之設計，可省力推動外並強調為市面上 X 光偵檢器能最接近床板的商品(如圖六)。
2. 與乳房檢測/治療相關技術：由 Hologic 公司提出 Digital Breast Tomosynthesis 之 C-View 與 TomoBiopsy 開發，此為 Selenia Dimensions 產品新增功能。C-View 是指可利用 Tomo 的 3D 影像產生單張 2D 影像的技術；而 TomoBiopsy 僅一次 Tomo 造影即可計算位置座標(傳統 Biopsy Guidance 需要 3 次 2D 攝影)，預期可減少劑量並縮短時間，在日本已上市。另外，Konica Minolta 公司提出「五日乳癌放射治療」的 SAVI 方式，初期乳癌大多數是採乳房保存療法，在進行腫瘤局部切除手術之後，需進行 5~6 週的每日放射治療(全乳房照射)，對患者生活造成很大負擔。此方法採用銻-192 射源組織內照射，僅需 5 日，每日兩次，每次約 5~10 分鐘，可降低正常組織的曝露，具備四種尺寸，適合日本人的乳房尺寸。

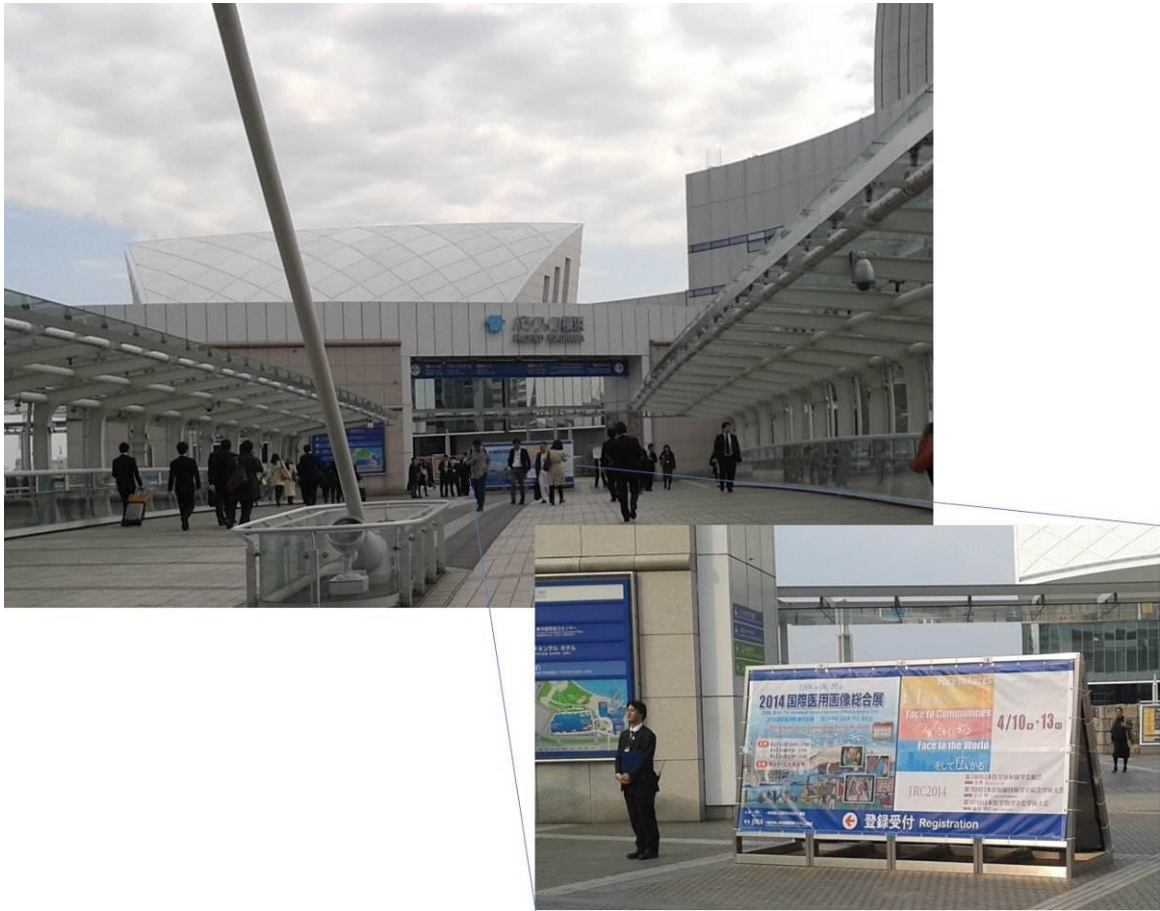
3. SPECT 及 CT 系統相關：Toshiba Medical System 公司開發用於腦與心臟造影的三偵檢器的 SPECT 裝置 GCA-9300R，相較於一般雙偵檢器系統可用 2/3 時間獲得同等品質影像，並採用 3D-OSEM 重建，其解析度與對比優於 FPB 結果。Hitachi Medical 公司開發新型 16 列 CT 裝置 Supria，修改其元件配置與進行薄型化，使造影口徑擴大為 75 cm。另外，利用功率因素校正技術(Power Factor Correction, PFC)可提升功率因素值至 99%，使電力利用率極佳化。精細且快速的掃描，每圈小於 1 秒。
4. 假體：Fuyo 公司開發的動態血流擬人假體，可供 MRI、CT 及血管造影研究用，利用幫浦達到血流循環或心臟收縮的模擬效果，如圖七、八。另外，有多家公司提出利用 3D printer 製作模型或輔具，如圖九。至京都科學公司攤位了解最新嬰兒全身/胸腔假體，與該公司業務留影(如圖十)。
5. 其他：IKEN 工程公司提出無鉛之 X 光屏蔽耐火隔間施工方法，以前使用無鉛 XP 板或含鉛石膏板會使牆壁增厚，室內變狹窄，新的配置方式較傳統 XP 板可減少 28 mm 及減輕 18% 重量(XP 板為無鉛之屏蔽材料，含鋇、石膏及玻璃纖維，15 mm 鉛當量為 1 mm，是無毒環保材質，如圖十一)。JPI 日本公司提出一種拆裝方便的 Grid Detector Holder，是將 Grid 固定在平板偵檢器上的工具，可節省對位的時間且不妨礙偵檢器的無線通訊功能。MedEx 公司提供客製化碳纖床板及各式支架，如圖十二。TAKEX 公司提供具自動化位置校正之雷射定位裝置，如圖十三。

(六) 會後前往京都科學公司參訪，由海外營業課高野遍課長接待，並帶領參觀展示室與假體製作現場，客製化規格討論主要與會人員為海外事業開發部高山俊之部長及台灣代理商曾小姐，眾人於公司接待處合影如圖十四。此次主要針對核醫用軟質乳房假體需求討論，高山部長提供了幾種設計想法。使我印象深刻的是高山部長很樂意敞開心胸地討論，甚至還直接前往實驗測試，當場解除一些疑慮。參觀該公司可以發現雖然是個規模不大的公司，但相當專業，擬真假體製作可以說是科學與藝術的結合，從過去用和紙手工製作人體模型(如圖十五)到利用動物的器官標本化技術，製作出心血管 CT 造影假體，如今 3D printer 的普及，促使更便利且客製化的假體設計製作(3D printer 之材料不適合製作假體，但可以製作模具)。國內 3D printer 亦已普及且有多種加工產業(塑膠、壓克力、金屬等)，雖擁有工具及 knowhow 技術但缺乏 idea 和 knowledge，因此，無法輕易轉入其他高經濟價值產品(如假體)。高山部長身為研發部一員，尚需時時參加國際醫學研討會，深入了解臨床/研究需求，再精進設計適合的產品。身為核研所的研究人員更應以此作為學習榜樣。

四、建議事項

- (一) 日本為亞太地區醫療市場最大(全球第二大)，技術最先進(全球第八大醫療器材出口國)的國家，觀察其研究發表以務實技術探討為主，不強調不切實際的新穎獨特。基礎技術及經驗點滴累積，加上有系統廠商做為後盾，所研發之技術有落實產業的機會，值得我國及本所學習！建議本所研發計畫應清楚訂定目標(欲解決的問題)並鼓勵技術紮根(基礎技術精進)，走出踏實及具特色之研究風格，並積極尋求落實產業的管道。
- (二) 醫療教育訓練及仿真成像驗證研究的需求日益漸增，可以發現模擬人形態/功能所設計出的假體(phantom)，是最客觀的待測物且已成為不可或缺的工具。透過假體實驗除了能比對不同儀器之成像性能外，亦能於儀器開發階段預測未來臨床影像品質，提供醫師預覽評估及使用建議回饋。建議進行成像系統開發工作應同步關注假體發展趨勢。
- (三) 此次公差參加醫學影像國際技術展覽，除了系統產品類規格型錄的蒐集外，亦取得影像醫材系統相關之零組件配備資訊，當面溝通可獲得公開資訊外之消息，相當有收穫。惟展期短且與研討會時間重疊，建議未來能 2 人以上前往(亦可考量與院端使用者或廠商同行)，將能兼顧技術面、應用面(臨床需求)、生產面(成本)多觀點，擴大其效益。

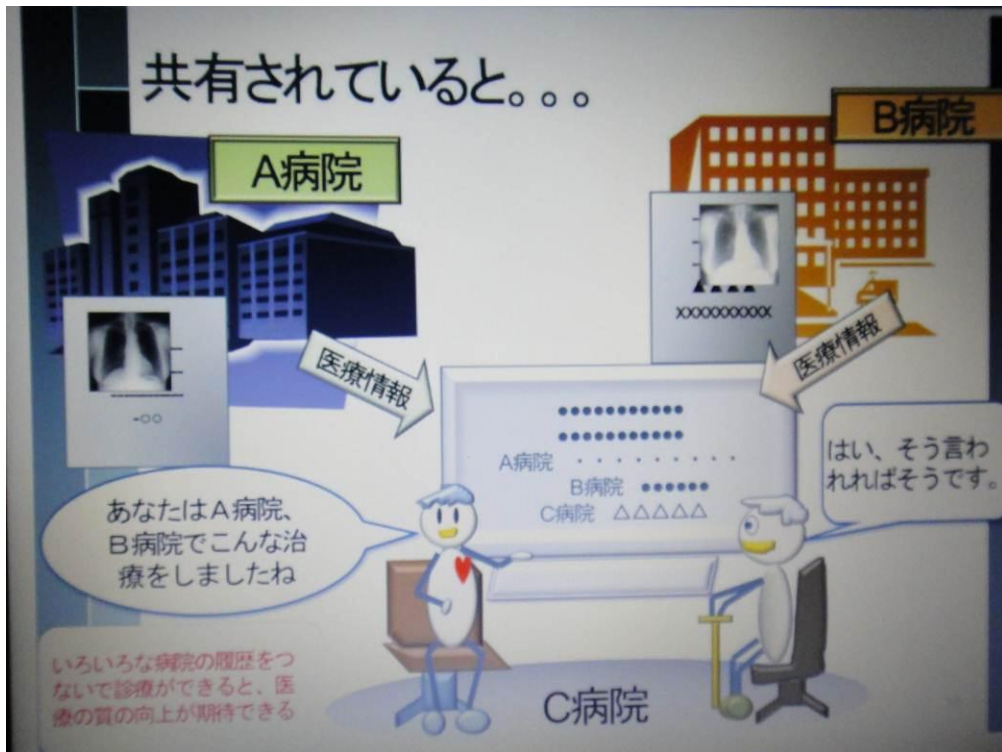
五、附 圖



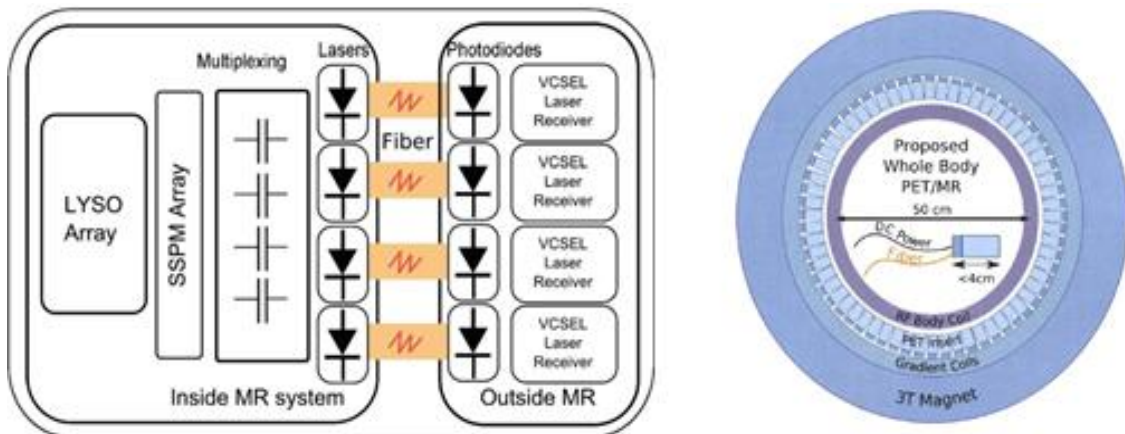
圖一、PACIFICO YOKOHAMA 會場各館交界處。



圖二、醫學影像國際技術展覽會(ITEM 2014)展場。



圖三、診療影像及檢查情報安全的共享，有助於醫療品質的提升。



圖四、RF-transparent PET 設計架構。



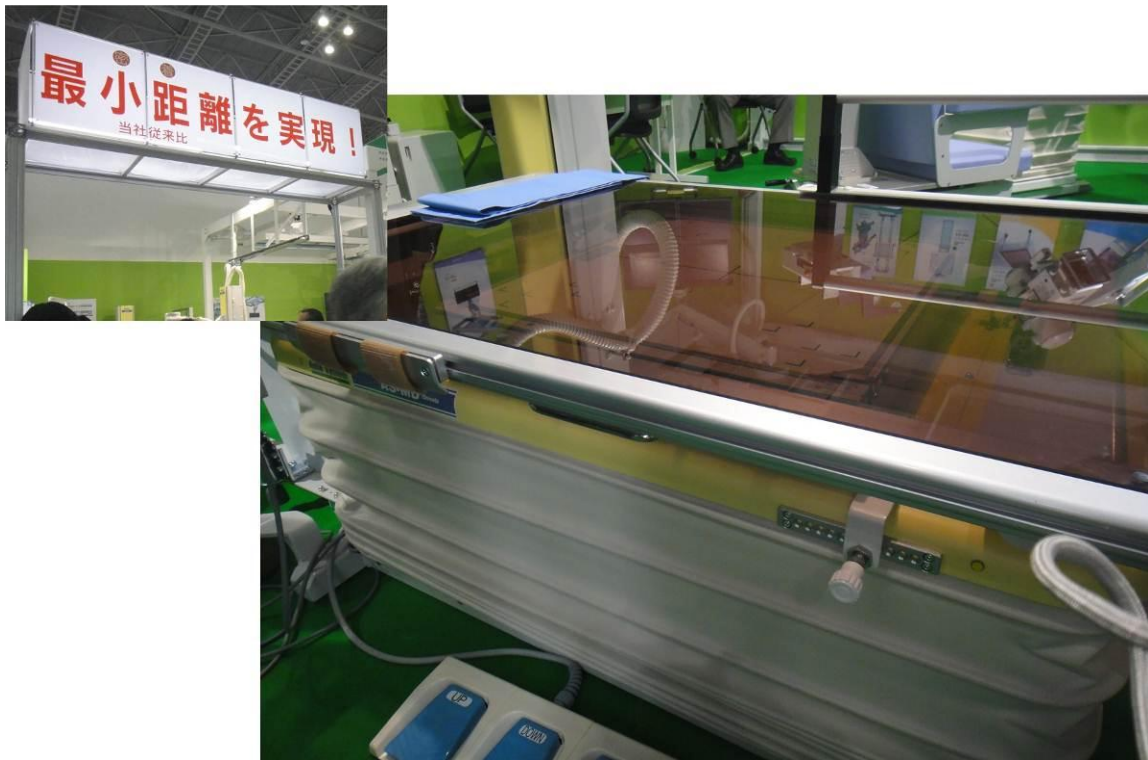
(上方から撮影時)



(側方から撮影時)

図 1 トリアージテーブル外観

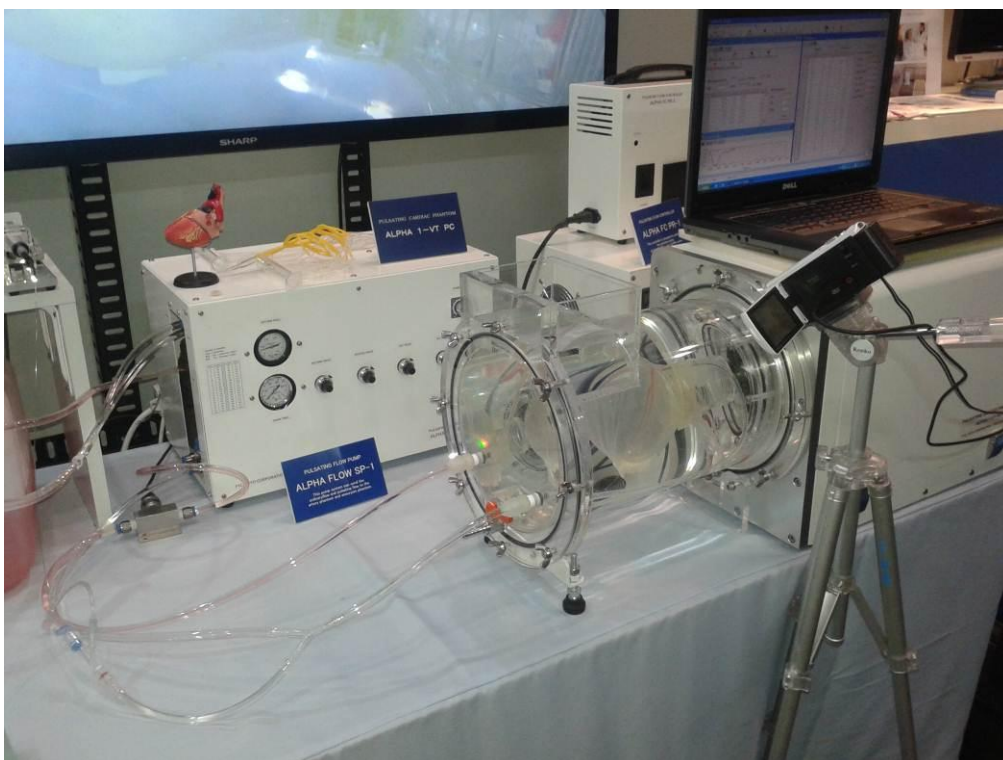
圖五、六濤公司提出一種急救用的造影床。



圖六、ELEKTA 公司提出傾斜抽換造影床板下的數位 X 光偵檢器之設計。



圖七、Fuyo 公司開發的動態血流擬人假體(腦血流)。



圖八、Fuyo 公司開發的動態血流擬人假體(心臟)。



圖九、3D printer 製作模型或輔具。



圖十、參觀京都科學公司攤位。



圖十一、無鉛之屏蔽材料 XP 板。



圖十二、MedEx 公司提供客製化碳纖床板及各式支架。



圖十三、TAKEX 公司提供具自動化位置校正之雷射定位裝置。



圖十四、至京都科學公司參訪，眾人於公司接待處合影。



圖十五、和紙手工製作人體模型。

六、附 錄

The 73rd Annual Meeting of the Japan Radiological Society

	8:00	9:00	10:00	11:00	12:00	13:00
April 10 (Thu.)	Pacifico Yokohama Conference Center					
	Main Hall					
	301					
	302					
	303					
	304					
	311+312					
313+314						
Annex Hall			10:00-18:00			
F205+206			CT Colonography Training Course Gen Iinuma, Nobuya Sasaki, Mototaka Miyake			
F203+204			10:00-11:15 CT Colonography Training Course	11:15-11:45 Overseas Lecture 4 (p. 207) Moderator: Yutaka Imai Speaker: Roberto Gassal	11:45-13:30 CT Colonography Training Course	
Marine Lobby		9:00-19:00	Electronic Exhibition & Product Exhibition			
Exhibition Hall A~D						

April 10 (Thu)

	13:00	14:00	15:00	16:00	17:00	18:00	19:00
April 10 (Thu.)							
		14:00-16:30 Representative Assembly					
				16:00-17:00 1. RT 1 Lung Keiichi Jingu	17:00-17:30 Overseas Lecture 1 (p. 206) Moderator: Takashi Nakano Speaker: Xianshu Gao	17:30-18:20 2. RT 2 Esophagus Norihiko Kamikonya	
				16:00-16:40 3. Cardiovascular MRI Shigeo Okuda	16:40-17:10 Overseas Lecture 2 (p. 206) Moderator: Masamitsu Hattokenaka Speaker: Jean-Yves Gaubert	17:10-18:00 4. Cardiovascular 2 Artery Masao Miyagawa	
				16:00-16:40 5. IR 1 Aortic aneurysm Yoshiaki Narimatsu	16:40-17:10 Overseas Lecture 3 (p. 206) Moderator: Shozo Hirota Speaker: Ziv J Haskal	17:10-17:50 6. IR 2 Portal hypertension Norifumi Nishida	
				16:00-16:50 7. NM 1 CNS Jun Hatazawa	17:00-18:00 8. NM 2 Head and neck Yasuo Kuwabara		

The 73rd Annual Meeting of the Japan Radiological Society

April 11 (Fri)

	8:00	9:00	10:00	11:00	12:00	13:00
Pacifico Yokohama Conference Center	8:00-9:00 Educational Lecture 1 (p. S108) Radiation exposure / Protection 1 JRS members only					
National Convention Hall	9:10-11:50 Resident Seminar (Diagnosis) 1 (p. S103) Moderator : Shigeki Aoki, Kiyoshi Murata Speaker : Harushi Mori, Tatsuo Kono, Saiko Isehiki, Shinji Hashimura **Interactive seminar					
Main Hall	8:00-9:00 Educational Lecture 2 (p. S109) Imaging of pancreatic cystic tumors	9:10-11:10 Symposium 1 (p. S83) Hepatobiliary and pancreatic imaging : Update Moderator : Katsuyoshi Ito, Toshifumi Gabata Speaker : Kazuhiko Ueda, Satoshi Kobayashi, Kengo Yoshimitsu, Hiroyuki Irie	11:10-11:50 Special Lecture (p. S84) Moderator : Kuni Ohmoto Speaker : Osamu Matsu	12:00-12:50 Luncheon Seminar 1 Moderator : Takashi Yoshida (DAIICHI BANKYO CO., LTD.)		
301	8:00-9:00 Educational Lecture 3 (p. S110) Imaging of mediastinal masses 1	9:10-11:10 Symposium 2 (p. S84) Clinical research Moderator : Yasuaki Arai, Yasuhiro Fujiwara Speaker : Yasushi Kajii, Yochi Nakamichi, Yasuaki Arai, Yasuhiro Fujiwara, Masahiko Oguchi, Toshihiro Tanaka	12:00-12:50 Luncheon Seminar 2 Moderator : Hiroko Kawashima (FLUORIM Medical Co., Ltd.)			
302	8:00-9:00 Educational Lecture 4 (p. S111) Imaging of white matter diseases in adults	9:10-10:10 11. Chest 1 Lung cancer Kazuko Ashizawa	10:10-10:40 Overseas Lecture 8 (p. S88) Moderator : Shuji Sakai Speaker : Cornelia M. Schaefer-Prokop	10:40-11:30 12. Chest 2 Function Yoshiharu Ohno	12:00-12:50 Luncheon Seminar 3 Moderator : Noriyuki Tomiyama (GE Healthcare Japan)	
303	8:00-9:00 Educational Lecture 5 (p. S111) Cardiac CT and MRI imaging	9:10-10:00 15. Neuroradiology 1 Brain tumor 1 Osamu Abe	10:00-10:30 Overseas Lecture 8 (p. S88) Moderator : Tomohide Ogawa Speaker : Christopher Heiss	10:30-11:10 16. Neuroradiology 2 Brain tumor 2 Hirohiko Kimura	12:00-12:50 Luncheon Seminar 4 Moderator : Masumi Kadaya (Bayer Yakuhin, Ltd.)	
304	8:00-9:00 Educational Lecture 6 (p. S112) NM1: Brain diseases	9:10-9:50 17. NM 3 Lymphoma Koji Murakami	9:50-10:20 Overseas Lecture 9 (p. S89) Moderator : Tomoko Inoue Speaker : David J. Yang	10:20-11:00 18. NM 4 Oncology, inflammation Hiroshi Toyama	12:00-12:50 Luncheon Seminar 5 Moderator : Satoru Takahashi (Siemens Japan K.K.)	
311+312	8:00-9:00 Educational Lecture 7 (p. S113) Imaging of salivary gland	9:10-9:40 Overseas Lecture 10 (p. S91) Moderator : Hidetoshi Minna Speaker : Jaffer C. Ghanem	9:40-10:40 Educational Lecture 11 (p. S118) MRI 1 Endovascular aortic repair	12:00-12:50 Luncheon Seminar 6 Moderator : Manabu Minami (AZE LTD.)		
313+314	8:00-9:00 Educational Lecture 8 (p. S113) Renal and retroperitoneal imaging	9:10-10:00 21. Prostate 1 Prostate 1 Takeshi Yoshizako	10:00-10:30 22. Prostate 2 Prostate 2 Saitou Takahashi	10:40-11:10 23. NM 5 Bone Teruki Sone	11:10-11:50 24. NM 6 PET and other Ichiei Kuji	12:00-12:50 Luncheon Seminar 7 Moderator : Kei Takase (Yokogawa Medical Solutions Corporation)
315	8:00-9:00 Educational Lecture 9 (p. S115) Role of plain X-ray in musculoskeletal imaging	9:10-9:50 25. Female Pelvis 1 Ovary Junko Takahama	10:00-10:40 26. Technique: Radiation Exposure Hanuhiko Machida	12:00-12:50 Luncheon Seminar 8 Moderator : Kuni Ohmoto (Daeweb Japan KK / TERUMO CORPORATION)		
416+417	12:00-12:50 Luncheon Seminar 9 Moderator : Yasuyuki Yamashita (TOSHIBA MEDICAL SYSTEMS CORPORATION)					
Marine Lobby 1	9:10-9:52 CYP05 1 DR: Cardiac 1 Kazunori Kuroki	10:00-10:36 CYP05 2 DR: Cardiac 2 Toru Sakuma	11:00-11:42 CYP05 3 DR: Neuroradiology 1 Masasaki Hori			
Marine Lobby 2	9:10-9:28 CYP05 7 IR 1: Stent-graft / Tetsuya Fukuda	10:00-10:24 CYP05 8 IR 2: Embolization / Manabu Higashimoto	11:00-11:36 CYP05 9 IR 3: Miscellaneous / Yoshihiro Toyama			
Annex Hall	8:00-9:00 Educational Lecture 10 (p. S117) RT1: Breast and esophageal cancers	9:10-10:10 Educational Lecture 12 (p. S119) RT2: Bladder and prostatic cancers	10:10-10:40 Overseas Lecture 12 (p. S20) Moderator : Kenji Nemoto Speaker : Pamela Carlton	11:00-11:40 若手研修 研究会 JRS	12:00-12:50 Luncheon Seminar 10 Moderator : Kengo Ito (The Japan Council of Nuclear Technology / FUJIFILM IRECO Co., Ltd.)	
Marine Lobby	7:15-19:00 Electronic Exhibition & Product Exhibition					
Exhibition Hall A~D	9:30-10:00 Open ceremony		10:00-17:00 ITEM2014			

April 11 (Fri.)

April 11 (Fri.)

	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	13:00-14:30 Opening Ceremony Tokyo Metropolitan University Orchestra						18:15-19:30 Reception for All Participants Yokohama Bay Hotel Tokyo BGF Queen's Grand Ballroom
	14:30-15:00 Honorary Member Awarding Moderator: Kazuo Sugimura Speaker: Junji Takagida		15:10-17:10 Symposium 3 (p. S88) Don't miss systemic diseases : Clues to diagnosis Moderator : Masaki Akahane, Taro Shimono Speaker : Taro Shimono, Hiroaki Sugura, Takashi Koyama, Hajime Fujimoto				
	15:10-16:00 9. Liver 1 HCC 1 Tomoki Ichikawa		16:00-16:30 Overseas Lecture 5 (p. S89) Moderator : Katsuyoshi Ito Speaker : Charles Sirin		16:30-17:10 10. Liver 2 HCC 2 Hiroyoshi Isoda		
	15:10-16:00 13. IR 3 Embolization (Bleeding) Osamu Ikeda		16:00-16:30 Overseas Lecture 7 (p. S89) Moderator : Yuzo Nakajima Speaker : Neven Zehra Elmas		16:30-17:30 14. IR 4 Embolization (Kidney, pelvis) Miyuki Sone		
	15:10-17:10 Symposium 4 (p. S89) Medical education : Present and future Moderator : Hiroshi Honda, Susumu Kanazawa Speaker : Masumi Kadaya, Kenji Nemoto, Yutaka Sato, Tatsuo Ashizawa						
	15:10-16:10 19. Cardiovascular 3 Coronary artery 1 Kei Takase		16:20-17:20 20. Cardiovascular 4 Coronary artery 2 Hiroshi Higashino				
	15:10-16:10 Educational Lecture 13 (p. S120) IR2: Iso aneurysm, biliary intervention						
	15:10-16:10 Educational Lecture 14 (p. S121) RT3: Basics of radiotherapy						
	15:10-16:10 27. Breast 1 MRI 1 Naoya Gomi		16:10-16:40 Overseas Lecture 11 (p. S21) Moderator : Kazuhiko Fukuda Speaker : Poma Gilbert		16:40-17:30 28. Breast 2 MRI 2 Tokiko Endo		
	15:10-15:58 CYP05 4 MRI 1: Chest, cardiac Yoshihiro Okumura						
	16:10-16:28 CYP05 5 MRI 2: Brain, liver Hiroshi Hori						
	15:10-15:52 CYP05 10 RT 5: Urologic Hidetoshi Kobayashi						
	16:10-16:34 CYP05 11 RT 6: Uterus Takafumi Tota						
	17:00-17:36 CYP05 6 DR: Contrast media, Miscellaneous Tatsuhiko Takahashi						
	17:00-17:48 CYP05 12 RT 7: Miscellaneous Kazuhiko Ogawa						
	15:10-17:10 Resident Seminar (Radiation Oncology) (p. S100) Moderator : Masanori Nakazawa, Norio Mitsuhashi Speaker : Takafumi Komiya, Chikako Yamaguchi, Satoshi Nakamura						
	Electronic Exhibition & Product Exhibition						
	ITEM2014						

The 73rd Annual Meeting of the Japan Radiological Society

April 12 (Sat)

	8:00	9:00	10:00	11:00	12:00	13:00
National Convention Hall	8:00-9:00 Educational Lecture 15 (p. S122) Medical ethics	9:10-11:50 Resident Seminar (Diagnosis) 2 (p. 910)	Moderator: Shozo Tamura, Yumiko Tanaka Speaker: Noriatsu Ichiba, Shuichi Satoh, Hajime Fujimoto, Takahito Tsuboyama			
Main Hall	8:00-9:00 Educational Lecture 16 (p. S123) Imaging of pancreatic solid tumors	9:10-11:35 Joint Symposium 1 (p. 888)	Interventional radiology: Make it safer and sooner Moderator: Sachio Kurabayashi, Yoichi Eguchi Speaker: Hiromichi Yokoyama, Takao Hioki, Hozumi Asai, Fuminori Moriyasu, Takamichi Murakami		12:00-12:50 Luncheon Seminar 11	Moderator: Sachio Kurabayashi (TOSHIBA MEDICAL SYSTEMS CORPORATION)
301	8:00-9:00 Educational Lecture 17 (p. S124) Aortic dissection	9:10-10:10 23. Neuroradiology 3 Degeneration Moderator: Takaaki Horiga Speaker: Akira Shinzawa	10:10-10:40 Overseas Lecture 18 (p. S72)	10:50-11:50 Special Project 1 (p. S84) How to improve your English Moderator: Hiroshi Honda Speaker: Kosei Ishigami, Isao Date	12:00-12:50 Luncheon Seminar 12	Moderator: Hiroaki Honda (Eaii Co., Ltd)
302	8:00-9:00 Educational Lecture 18 (p. S124) RT4 : Lung cancer	9:10-10:10 Educational Lecture 25 (p. S130) RT5 : Hepatic tumor, pancreatic tumor	10:20-11:20 32. RT 3 Head and neck 1 Takeshi Kodaira	12:00-12:50 Luncheon Seminar 13	Moderator: Masahiro Jinzaki (TERUMO CORPORATION)	
303	8:00-9:00 Educational Lecture 19 (p. S123) NM2 : Cardiac imaging	9:10-11:10 Symposium 5 Local therapy for lung cancer : Current status Moderator: Masahiro Hiraoka, Yoichi Nakamishi Speaker: Hiroshi Date, Yasushi Nagata, Tadashi Kamada, Susumu Kanazawa	12:00-12:50 Luncheon Seminar 14	Moderator: Noriko Aida (Siemens Japan K.K.)		
304	8:00-9:00 Educational Lecture 20 (p. S126) Imaging of knee	9:10-11:10 Symposium 6 Cardiac CT/MRI : Update Moderator: Kunhiro Yoshioka, Teruhito Mochizuki Speaker: Noriko Oyama-Manaba, Yoshiro Hori, Michinobu Nagao, Nobuo Iguchi	12:00-12:50 Luncheon Seminar 15	Moderator: Teruhito Mochizuki (Bayer Yakuhin, Ltd.)		
311+312	8:00-9:00 Educational Lecture 21 (p. S128) Imaging of white matter	9:10-9:50 39. CT Technique Satoru Kitano	9:50-10:20 Overseas Lecture 19 (p. S73) Moderator: Kazuo Awai Speaker: K. Ty Bae	10:20-11:00 40. MRI Technique Taro Takahara	12:00-12:50 Luncheon Seminar 16	Moderator: Masahito Uesugi (JMAAC SYSTEM, INC.)
313+314	8:00-9:00 Educational Lecture 22 (p. S127) Imaging of thyroid and parathyroid glands	9:10-9:50 44. IR 9 Venous, lymphatic Hiroyuki Tajima	9:50-10:20 Overseas Lecture 20 (p. S74) Moderator: Minoru Sato Speaker: John A. Koumanos	10:20-11:10 45. IR 10 Vascular IR (Miscellaneous) Tatsumi Kaji	12:00-12:50 Luncheon Seminar 17	Moderator: Kazuro Sugimura (Philips Electronics Japan, Ltd.)
315	8:00-9:00 Educational Lecture 23 (p. S128) Obstetric and gynecologic imaging	9:10-10:10 49. Emergency, AI Emergency, AI Saiji Shiotani	10:20-11:20 50. IT, PACS IT, PACS Midori Kimura	12:00-12:50 Luncheon Seminar 18	Moderator: Kunihiko Fukuda (SHIMADZU CORPORATION)	
416+417						12:00-12:50 Luncheon Seminar 19 (TechMetric Corporation)
Marine Lobby 1	9:10-9:46 CYP08 13 DR Musculoskeletal Tatsuke Sasaki	10:10-10:34 CYP08 14 DR Osteoarthritis & gynecology Hiroshi Okada	11:00-11:42 CYP08 15 DR Ulcerog Tatsuo Maeda			
Marine Lobby 1	9:10-9:59 CYP08 20 DR Abdomen Yoshitaka Okada	10:10-10:40 CYP08 21 DR Pancreas Akira Furukawa	11:00-11:42 CYP08 22 NM 3 : PET Kazuyoshi Suga			
Annex Hall	8:00-9:00 Educational Lecture 24 (p. S129) Imaging of mediastinal masses 2	9:10-9:40 53. Liver 3 Fibrosis Yoshi Aoyama	10:10-10:40 Overseas Lecture 21 (p. S75) Moderator: Masahiro Akahane Speaker: Shuji Ino Cho	11:00-11:40 57. Liver 5 Staboles, iron deposition and others Shuji Date	12:00-12:50 Luncheon Seminar 20	Moderator: Toshiyuki Gabata (PBP Corporation)
Marine Lobby	7:15-19:00 Electronic Exhibition & Product Exhibition					
Exhibition Hall	9:30-17:00 ITEM2014		11:00-11:45 Product Exhibition Core Time			

April 12 (Sat)

April 12 (Sat)

	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	13:00-14:00 Educational Lecture 26 (p. S131) Radiation exposure / Protection 2	14:20-15:20 Special Project 2 (p. S89) Gyoretzu Moderator: Shinobu Matsumoto Speaker: Haruo Kikuma, Kazuro Sugimura, Susumu Kanazawa	17:30-19:30 Image Interpretation Session Moderator: Akihiro Nishie, Katsuya Kato				
	13:00-15:00 Joint Symposium 2 (p. 890) Reduction of medical exposure—Balance of justification and optimization Moderator: Masahiro Fukushi Speaker: Osamu Miyazaki, Shoichi Suzuki, Yoshiya Shimada, Kazuki Akahane	15:10-17:10 Focus Meeting ATSEERS IPP's consensus classification 2019: Modifications and points of issue Moderator: Fumikazu Sakai, Takeaki Johkoh Speaker: Junya Fukukita, Kiminori Fujimoto, Yoshizazu Inoue					
	13:00-15:00 Symposium 7 (p. 894) Imaging of dementia : Update Moderator: Hiroshi Matsuda, Hajime Kitagaki Speaker: Hiroshi Matsuda, Kengo Ito, Aya Tokumaru, Haruo Hanyu	15:10-16:00 30. Cardiovascular 5 Myocardium 1 Norihiko Yoshimura	16:00-16:30 Overseas Lecture 14 (p. S78) Moderator: Naotomu Matsunaga Speaker: HyunWoo Goo	16:30-17:00 31. Urinary 5 Myocardium 2 Hiroaki Naito			
	13:00-15:30 Symposium 8 (p. 896) Treatment strategy of localized prostate cancer Moderator: Tatsuki Inomata, Junichi Hiatsuka Speaker: Takashi Mizowaki, Hiroshi Tsuji, Ahsunori Yorozu, Yasuo Yoshioka, Shin Ebara	15:40-16:30 33. RT 4 Prostate Katsuke Sasai	16:40-17:40 34. RT 5 Prostate, bladder Yoshihiro Takai				
	13:00-13:50 35. Chest 3 COPD Masashi Takahashi	13:50-14:20 Overseas Lecture 15 (p. S77) Moderator: Taro Kouchiyama Speaker: Sun-Young Song	14:20-15:10 36. Chest 4 Lung tumor Takatoshi Aoki	15:00-16:00 Overseas Lecture 16 (p. S74) Moderator: Koichiro Yamamoto Speaker: Ziv J. Harel	16:00-18:00 Sports-related Symposium Future Perspectives of TACE in Liver Cancer Treatment Moderator: Susumu Kanazawa, Kimihiko Kichikawa Speaker: Keigo Osuga, Osamu Matsui, Shiro Miyajima, Yasuaki Arai (Ganbat Japan KK)		
	13:00-13:50 37. IR 5 Embolization (liver) 1 Shiro Miyayama	13:50-14:20 Overseas Lecture 17 (p. S76) Moderator: Tsuyuki Yamaguchi Speaker: Yi-you Chou	14:20-15:00 38. IR 6 Embolization (liver) 2 Keigo Osuga				
	13:00-14:10 41. RT 6 Radiobiology and others Hideyuki Sakurai	15:10-16:10 42. IR 7 Experiment, basics Toshiyuki Matsuoka		16:20-17:10 43. IR 8 Angioplasty and others Sojiro Morita			
	13:00-13:50 46. Cardiovascular 7 Miscellaneous Munemasa Okada	14:00-14:30 47. NM 7 Lung Saigo Kinuya	15:00-15:50 48. NM 8 Cardiovascular Shin-ichiro Kimita				
	13:00-13:30 51. Breast 3 US Hideo Tsuda	13:30-14:00 Overseas Lecture 22 (p. S79) Moderator: Takiko Endo Speaker: Valérie P. Jackson	14:00-14:30 52. Breast 4 Mammography Hioko Kawahara	14:40-15:40 53. Contrast Medium Contrast medium Yoshito Tashima	16:00-17:00 54. GI Tract GI tract Kenji Matsuzaki		
	13:10-13:46 CYP08 16 RT 1 : Brain, malignant lymphoma Hidetoshi Aoyama	14:00-14:42 CYP08 17 RT 2 : Head & neck Yuko Nakayama	15:00-15:30 CYP08 18 RT 3 : Lung Yuko Nakayama	16:00-16:36 CYP08 19 RT 4 : Use, gastrointestinal, breast Takao Takahashi			
	13:00-13:30 Overseas Lecture 22 (p. S77)	13:30-14:10 53. Biliary Tract Biliary tract Moderator: Masayoshi Kurihara Speaker: Elmer Merino	14:10-14:40 Overseas Lecture 23 (p. S78) Moderator: Toshiro Tanaka Speaker: Marc Zins	14:40-15:30 59. Pancreas Pancreas Kensaku Mori	15:40-16:10 Overseas Lecture 24 (p. S78) Moderator: Kenji Yoshitatsu Speaker: Yuhong Zhou	16:10-17:00 60. Liver 6 Miscellaneous Takaharu Tsuda	
	7:15-19:00 Electronic Exhibition & Product Exhibition						
	14:00-15:00 Product Exhibition Core Time		ITEM2014				

The 73rd Annual Meeting of the Japan Radiological Society

April 13 (Sun)

	8:00	9:00	10:00	11:00	12:00	13:00
Pacifico Yokohama Conference Center	8:00-9:00 Educational Lecture 27 (p. 8132) Quality of imaging diagnosis	9:10-11:10 JCRJFJFA Joint Symposium 3 (p. 891) JCRJFJFA Joint Symposium Connecting talent promotion and specialist development Moderator: Masao Fanehashi, Toru Kamikawa Speaker: Masumi Kadoya, Tsukasa Doi, Takeji Sakae, Michie Ayabe				
Main Hall						
301	8:00-9:00 Educational Lecture 28 (p. 8133) Breast imaging	9:10-10:00 61. Neuroradiology 4 CVD 1 Hanao Isoda	10:10-11:10 62. Neuroradiology 5 CVD 2 Shoki Takahashi		12:00-12:50 Luncheon Seminar 21 Moderator: Mitsuru Matsuki (Fujii Pharma Co., Ltd.)	
302	8:00-9:00 Educational Lecture 29 (p. 8134) Imaging of pancreatic ductal carcinoma	9:10-9:40 Overseas Lecture 26 (p. 8131) Kidney Moderator: Yoshitane Naranji Speaker: Masahiro Gata	9:40-10:40 63. Kidney Kidney Hiroshi Shimoto	10:40-11:10 Overseas Lecture 28 (p. 8133) Urinary tract, adrenal Moderator: Kenzou Okano Speaker: Akira Kawashima	11:10-11:50 64. Urology / End. / MRI Urinary tract, adrenal Kentarou Ida	12:00-12:50 Luncheon Seminar 22 Moderator: Shigeaki Aoki (GE Healthcare Japan)
303	8:00-9:00 Educational Lecture 30 (p. 8135) Imaging of thoracic trauma	9:10-9:40 Overseas Lecture 24 (p. 8131) Imaging-guided ablation Moderator: Yasuaki Arai Speaker: Ziv J. Haskal	9:50-11:50 Symposium 9 (p. 890) Image-guided ablation Moderator: Hidefumi Mimura, Koichiro Yamakado Speaker: Koichiro Yamakado, Hideo Gohara, Toshiya Shibata, Noboru Tanigawa		12:00-12:50 Luncheon Seminar 23 Moderator: Kimihiko Kichikawa (Eisai Co., Ltd.)	
304	8:00-9:00 Educational Lecture 31 (p. 8136) NMS : Tumor imaging	9:10-10:10 68. Female Pelvis 2 Uterus 1 Yoshimitsu Ohgaya	10:10-10:40 Overseas Lecture 29 (p. 8133) Moderator: Kaori Toghiani Speaker: Elizabeth A. Sadzewski	10:40-11:20 69. Female Pelvis 3 Uterus 2 Shinya Fuji	12:00-12:50 Luncheon Seminar 24 Moderator: Hiroshi Matsuda <i>The Japanese Ovarian Fictio Neurology (New Med) Physics Co., Ltd.</i>	
311+312	8:00-9:00 Educational Lecture 32 (p. 8137) Imaging of white matter diseases in children	9:10-10:10 Educational Lecture 36 (p. 8140) IR3 : Vertebroplasty, hepatic arterial infusion Moderator: Shigeru Ehara Speaker: Soroko Langner	10:20-10:50 Overseas Lecture 30 (p. 8133) Moderator: Shigeru Ehara Speaker: Soroko Langner	10:50-11:50 72. Musculoskeletal 1 Spine Osamu Tanaka	12:00-12:50 Luncheon Seminar 25 Moderator: Kazuo Kubota (Siemens Japan K.K.)	
313+314	8:00-9:00 Educational Lecture 33 (p. 8138) Aortic aneurysm	9:10-10:00 74. RT 7 Head and neck 2 Yoshikazu Kagami	10:10-10:50 75. RT 8 Brain, head and neck Toru Shibata	11:00-11:50 JCR Hour (p. 814) Moderator: Kimiyoshi Mizunuma, Hiroshi Ohnishi Speaker: Osamu Sakai, Miyuki Sone	12:00-12:50 Luncheon Seminar 26 Moderator: Masahiro Jinzaki (Zensett, Inc. / AMIN Co., Ltd.)	
315	8:00-9:00 Educational Lecture 34 (p. 8139) Pelvic imaging in children	9:10-9:40 Overseas Lecture 32 (p. 8133) Pediatric Moderator: Eiichi Kohda Speaker: Yukika Sato	9:40-10:40 78. Pediatric Pediatric Noriko Aida	10:50-11:30 79. IR 13 AVM Hiroyasu Fujiwara	12:00-12:50 Luncheon Seminar 27 Moderator: Kenji Nakamura (Philips Electronics Japan, Ltd.)	
416+417					12:00-12:50 Luncheon Seminar 28 Moderator: Hiromitsu Hayashi (Hitachi Medical Corporation)	
Marine Lobby 1	9:10-9:40 CYPOS 25 DRC Chest 1 Takechi Kubo	10:00-10:30 CYPOS 26 DRC Chest 2 Yuko Nishimoto	11:00-11:30 CYPOS 27 DRC Neuroradiology 2 Takeyuki Watanabe			
Marine Lobby 2	9:10-9:34 CYPOS 28 DRC Non-vascular Takaji Yamagami	10:00-10:36 CYPOS 29 DRC Liver 1 Yukihisa Saida	11:00-11:24 CYPOS 30 DRC Liver 2 Kenzoku Shimizu			
Annex Hall F205+206	8:00-9:00 Educational Lecture 35 (p. 8141) Quality of radiotherapy	9:10-10:10 Educational Lecture 37 (p. 8143) RT6: Palliative therapy, How to write a scientific paper		11:00-11:50 81. RT 9 Breast, musculoskeletal Naoto Shikama	12:00-12:50 Luncheon Seminar 29 Moderator: Takashi Mizowaki (Varian Medical Systems K.K.)	
Marine Lobby	7:15-15:00 Electronic Exhibition & Product Exhibition					
Exhibition Hall	9:30-15:00 ITEM2014					

April 13 (Sun.)

April 13 (Sun.)

	13:00	14:00	15:00	16:00	17:00	18:00	19:00
			15:00-16:15 Closing and Awards Ceremony JRC Festival Orchestra				
	13:00-13:40 13. 放射線医学会						
	13:00-13:30 Overseas Lecture 27 (p. 8131) Moderator: Takao Kodama Speaker: Hui-Jong Lee	13:30-14:30 65. Head and Neck Head and neck Hisao Tonami					
	13:00-13:50 66. IR 11 Nonvascular IR (Bopsy, ablation) Takaji Mogami	14:00-14:50 67. IR 12 Nonvascular IR (Ablation) Shigeru Furui					
	13:00-14:00 70. Neuroradiology 6 Miscellaneous Akira Uchino	14:10-14:50 71. Neuroradiology 7 Demyelination, inflammation, degeneration Kazuhiko Tsuchiya					
	13:00-13:30 Overseas Lecture 31 (p. 8133) Moderator: Masataka Uehara Speaker: Kenjiro Ouchi	13:30-14:30 73. Musculoskeletal 2 Joint and others Masahiko Fujii					
	13:00-13:40 76. NM 9 Liver and others Kiyoshi Koizumi	13:50-14:30 77. NM 10 Urinary organs Harumi Sakahara					
	13:00-13:40 80. Chest 5 Miscellaneous Yasuyuki Kurihara						
			Electronic Exhibition & Product Exhibition				
			ITEM2014				

The 70th Annual Scientific Congress of JSRT

Program April 10 (Thursday) Chairperson: C Presenter: P ATS: Applied Technology Seminar

EL: Educational Lecture AL: Advanced Lecture BL: Basic Lecture

Venue		8:00	9:00	10:00	11:00	12:00	13:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00			
Pacifico Yokohama, Conference Center	Main Hall														Main Hall		
	501								14:00	15:00	16:00	17:00	17:30			501	
	502										15:50	16:40	17:30			502	
	503										15:20	16:00	16:40	17:30			503
	416+417								14:20	15:20	16:10	16:40	17:30			416+417	
Pacifico Yokohama, Annex Hall	F203+F204				10:00	JRS CT Colonography Training Course 2014 C: G. Inuma, K. Mitsuaki						14:40	15:20	16:00	16:50	17:30	F203+F204
	F205+F206				10:00	JRS CT Colonography Training Course 2014 C: G. Inuma, K. Mitsuaki						18:00				F205+F206	
	F201								14:00			16:00	17:00	17:30			F201
	F202										14:40	15:40	16:20	17:00	17:30		
National Convention Hall	Marine Lobby				9:00	CyPos Viewing						19:00				Marine Lobby	
Exhibition Hall	Hall A ~ D														Hall A ~ D		

	Venue	8:00	9:00	10:00	11:00	12:00	13:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00		
Pacifico Yokohama, Conference Center	Main Hall							13:00 Plenary Session Opening Ceremony	14:00 Special Lecture Now and future of research and application of IRB P: J. Toguchida					Main Hall		
	501	8:00 (p.100) EL 1 (Nuclear Medicine) (State of the art technology in PET imaging) P: T. Mizuta	8:40 (BL) EL 1★ (Technologies to achieve simultaneous PET/MRI without modifications to the MR hardware) P: C. S. Levin	9:50 68th. Nuclear Medicine Section Clinical workflow of fused images made by SPECT/CT Optimization of the attenuation correction using CT in a nuclear medicine device, and MRI			11:50 (BL) ATS 1 (Orthopedic surgery) (Application of medical imaging in orthopedics) P: H. Iike			14:50 (p.90) EL 3★ (Breast imaging performance evaluation) P: E. Sarnel	15:50 75th. Imaging Section Let's talk about the image: Clinical image evaluation of the breast cancer				501	
	502		9:00 MR Sequence evaluation (89-94) C: K. Uchida	10:00 MR image reconstruction, compressed (95-98) C: J. Hata	10:40 MR Radial scan (99-103) C: J. Takahashi	11:30	12:00 (p.115) ATS 2 (Breast surgery) (Breast cancer diagnosis and treatment from current topics) P: S. Nakamura			14:50 (p.90) EL 4 (What kind of information we would like to acquire on hepatic MR examination?) P: S. Kobayashi	15:50 62nd. Radiation Imaging Section Theme C(MR) Pursuing better imaging techniques in radiology: No.121, Liver MR imaging				502	
	503		9:00 CT Pediatrics (104-107) C: K. Ohashi	9:40 CT Clinical technology: orthopedics (108-111) C: T. Nomizu	10:20 CT Contrast technique (112-115) C: Y. Nakaya	11:10 CT Contrast method (117-120) C: K. Terasawa	11:50 (BL) ATS 3 (Interventional Neurology) (Recent advancement of imaging technology for transcatheter aortic therapy) P: N. Sakai			14:50 (p.82) Expert Lecture 2 (The spread of low-dose CT screening, and future tasks) P: K. Hianai	15:50 (p.119) 16:20 (p.118) (BL) Lecture (Real-time CT fluoroscopy of breast cancer with real-time CT image quality evaluation) P: M. G. Shi	17:00 CT Dual-energy, basic analysis (121-124) C: F. Kawamata	17:40 CT Dual-energy, clinical application (125-128) C: S. Miyashita			503
	413 (CyPos)		9:00 MR Head 1 (1001-1004) C: H. Uozumi	9:30 MR Head 2 (1011-1015) C: Y. Fujiwara	10:00 MR Head and Neck MRA (1021-1024) C: T. Maekabe	10:30 MR fMRI (1031-1034) C: K. Yamashita	11:00 MR Spine (1041-1045) C: M. Sugiura				15:50 X-ray General radiography (1061-1064) C: T. Okamoto	16:20 X-ray Breast Imaging (1061-1063) C: K. Hirai	17:20 X-ray Angiography 1 (1071-1074) C: M. Yamada	17:50 X-ray Angiography 2 (1081-1083) C: T. Sakano	413 (CyPos)	
	414+415 (CyPos)		9:00 Radiotherapy QAQC 1 (1091-1093) C: T. Nakashima	9:30 Radiotherapy QAQC 2 (1101-1103) C: T. Nakashima	10:00 Radiotherapy QAQC 3 (1111-1114) C: Y. Yoshida	10:30 Radiotherapy QAQC 4 (1121-1124) C: T. Kawashima	11:00 Medical Information Intranet, management, education, cloud computing (1131-1136) C: T. Shimozono			14:50 CT Head (1141-1144) C: T. Sasaki	15:20 CT Contrast enhanced abdominal CT (1151-1154) C: S. Yoshikae	15:50 CT Contrast technique (1161-1164) C: E. Nohmura	16:20 CT Contrast theory (1171-1174) C: M. Kato	17:20 CT AEC (1181-1184) C: Y. Muzumi	17:50 CT Dose reduction technique (1191-1194) C: Y. Akawa	414+415 (CyPos)
	416+417		8:50 Collaborative session Cerebral blood flow 1 (129-134) C: T. Ogura	9:50 Collaborative session Lower limb vessels (135-139) C: N. Yanagawa	10:40 Collaborative session Cerebral blood flow 2 (140-145) C: H. Toyoshima	11:40	12:00 JRS Luncheon Seminar	12:40		14:50 Nuclear Medicine PET: basic 1 (146-150) C: D. Ito	15:40 Nuclear Medicine PET: basic 2 (151-155) C: Y. Tsutsui	16:30 Nuclear Medicine PET: clinical (156-162) C: K. Miwa			416+417	
Pacifico Yokohama, Annex Hall	F203+F204	8:00 (p.110) AL 2 (Radiation Protection 1) (Explanation about radiological examination to be passed-The role of radiological technology) P: Y. Ishida	8:40 (BL) EL 2 (Scientific base and a future: problem of threshold for radiologic induction contract) P: K. Nerishi	9:50 68th. Radiation Protection Section The present conditions and management for less radiation exposure of a practitioner in vascular IVR and non-vascular IVR			11:50 (BL) AL 5 (Imaging 2) (Fast studies, current status and future potential on compressed digital images (CADI)) P: S. Kobayashi	12:40		14:50 (p.91) EL 5 (The radiographic technology of weight bearing joint in lower limb) (The radiographic method needed X-ray image measurement in foot and ankle) P: E. Andrich	15:50 62nd. Radiation Imaging Section Theme A(X-ray) Pursuing better imaging techniques in radiology: No.119, Investigation for the present conditions and the future possibility of the imaging techniques in radiology of a knee and a joint domain				F203+ F204	
	F201	8:00 (p.110) AL 3 (X-ray) (Let's consider about the relationship between image quality and X-ray exposure conditions in digital imaging) P: M. Imajo	8:40 X-ray Breast Imaging: AGC (183-185) C: T. Koyama	9:00 X-ray Breast imaging: breast, etc. (186-188) C: H. Nishio	10:00 X-ray Breast Imaging: CNR, radiation quality (189-192) C: T. Arai	10:40 Collaborative session Breast imaging: quality control (173-176) C: M. Kawayama	11:20 US Ultrasound (177-179) C: A. Kanemura	11:50 (BL) ATS 4 (Dental surgery) (Application of cone beam X-ray CT in dental field) P: K. Maki	12:50	14:50 Radiotherapy Calculation algorithm (184-187) C: Y. Hatanu	15:30 Radiotherapy Dosimetry (184-187) C: H. Oguchi	16:10 Radiotherapy QAQC 3 (188-191) C: R. Kawamata	16:50 Medical Information Risk management, ontology, statistical analysis (192-197) C: Y. Yokooka		F201	
	F202	8:00 (p.110) AL 4 (Imaging 1) (Methods of image pattern recognition and applications to medical images) P: Y. Uchiyama	9:00 Imaging Image analysis, etc. (199-203) C: A. Kano, F. Maeda	10:00 Imaging CAD: detection, etc. (204-208) C: R. Ishii	10:50			11:50 (BL) Radiation Protection Dosimeter, equipment management (214-216) C: H. Saito	12:50	14:50 Radiation Protection Dosimeter, equipment management (214-216) C: H. Saito	15:40 Radiation Protection Dosimetry, management (217-219) C: R. Matsuda	16:40 Radiation Protection Dosimetry, management (217-219) C: R. Matsuda	17:30 Radiation Protection Education (220-224) C: S. Suzuki		F202	
National Convention Hall	Marine Lobby			CyPos Viewing											Marine Lobby	
Exhibition Hall	Hall A ~ D		9:30	10:00	ITEM 2014 Opening Ceremony										Hall A ~ D	
								International Technical Exhibition of Medical Imaging (ITEM) 2014								

	Venue	8:00	9:00	10:00	11:00	12:00	13:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00			
Pacifico Yokohama, Conference Center	Main Hall		9:10 (p.76)	Plenary Session : Symposium 1 (Interventional radiology: Make it safer and securer) P: H. Yokoyama, T. Hiraki, N. Asai, T. Murakami, F. Moriyasu					Plenary Session : Symposium 2 (Reduction of medical exposure-balance of justification and optimization.) P: O. Miyazaki, S. Suzuki, Y. Shimada, K. Akahane						Main Hall		
	501		8:50	9:50 (p.54)	Symposium 1★ CT Dose: The Challenge to DIR (dose index registry) I P: R. Ishigaki, T. Ito, M. Shinozaki, K. Nomura, O. Miyazaki		11:50 (20)	12:50 (p.116)	ATS 5 (Coronary Artery Disease) (How to combine imaging in coronary artery disease) P: Y. Kobayashi		15:50 (p.81)	16:40			501		
	502	8:00 (p.111)	8:40	9:00	10:00	10:50 (18)	11:50 (20)	12:50 (p.116)	ATS 6 (Neurosurgery) (Advanced neurosurgery with integrated information of image and function) P: K. Ohata		15:50 (p.81)	16:40			502		
	503	8:00 (p.111)	8:40	9:00	10:00	11:00	11:50 (20)	12:50 (p.117)	ATS 7 (Cardiovascular surgery) (TVAR/TEVAR in hybrid OR) P: H. Matsuda		15:50 (p.81)	16:40			503		
	413 (CyPos)		9:00	9:30	10:00	10:30	11:00	11:30	MR Equipment evaluation (2051-2053) C: K. Koyama		14:00	14:30	15:00	15:30	16:00	16:30	413 (CyPos)
	414+415 (CyPos)		8:50	9:20	9:50	10:20	10:50		13:30	14:00	14:30	15:00	15:30	16:00	16:30	414+415 (CyPos)	
	416+417		9:00	9:30	10:00	10:40	11:20 (18)	12:00 (p.120)	JSRT Luncheon Meeting (JSRT lunch meeting with colleagues from Asian countries) C: K. Ueda		14:30	14:50	15:40	16:20		416+417	
Pacifico Yokohama, Annex Hall	F203+F204	8:00 (p.112)	8:40	8:50 (p.91)	9:50	43rd. Measurement Section The standardization of an average glandular dose (AGD) in Japan		11:50 (20)	12:50 (p.117)	Symposium 2 (Regional healthcare coordination and external storage from the viewpoint of medical imaging information) P: M. Uesugi, M. Hosoba, K. Nakayasu, M. Kimura		15:50 (p.81)	16:40		F203+F204		
	F201	8:00 (p.112)	8:40	9:00	9:50	10:50	11:40	12:00 (p.110)	12:50 (p.110)	Nuclear Medicine SPECT: brain perfusion 2 (2101-2104) C: T. Imori		15:50 (p.81)	16:30		F201		
	F202				10:20 (p.105)	11:00 (p.105)	11:50		13:00 (p.106)	13:50 (p.106)	14:40 (14)	15:50	16:30		F202		
National Convention Hall	Marine Lobby			CyPos Viewing										19:00	Marine Lobby		
Exhibition Hall	Hall A ~ D		9:30	International Technical Exhibition of Medical Imaging (ITEM) 2014										17:00	Hall A ~ D		

	Venue	8:00	9:00	10:00	11:00	12:00	13:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	
Pacifico Yokohama, Conference Center	Main Hall		9:10 (p.79) Plenary Session : Symposium 3 (Connecting talent promotion and specialist development.) P: M. Kadoya, T. Doi, T. Sakae, M. Ayabe	11:10 (p.81) Special Lecture 2 (Respect for the game.) P: T. Kamikawa						15:00 Plenary Session: Awards Ceremony and Closing Session				Main Hall	
	501	8:00 (p.107) BL 6 (Medical Information) (Introduction to wireless LAN in the radiology department.) P: S. Hoshino	9:00 (p.92) EL 7 (Information management from the viewpoint of medical informatics.) P: E. Kimura	10:00 23rd. Medical Information Section The first step for the evaluation after the system introduction		12:00 (p.113) AL 10 (Medical Information) (Clinical economic, principal and topics.) P: K. Ogawara		13:00 (p.119) Invited Lecture★ (Patient dose and related activities in US image genity, image wisely, REM, NDIR.) P: C. D. Carr	14:00						501
	502	8:00 (p.107) BL 7 (MR) (Technology of the fast imaging in MRI for beginners.) P: M. Takahashi	9:00 (p.92) MR Equipment development, image evaluation (357-362) C: N. Aoyama	10:00 MR Phantom development, image evaluation (363-368) C: T. Sahara	11:00	12:00 (p.118) ATS 10 (Technology) (Usefulness of diagnostic imaging in oncological cancer.) P: H. Uemura	13:00	13:10 (p.118) MR Extremity MRA (369-372) C: H. Kitagawa	13:50 MR Musculoskeletal (373-377) C: K. Saitome	14:40					502
	503	8:00 (p.107) BL 9 (CT) (Introduction to image quality evaluation and radiologic dose assessment of computed tomography.) P: T. Mito	9:00 (p.92) EL 8 (The role of diagnostic imaging in pediatric diseases.) P: M. Nishikawa	10:00 24th. Radiation Image Section Theme B(CT) Pursuing better imaging techniques in radiology- No.120, Again, what is children's CT?	11:00	12:00 (p.118) ATS 11 (Thoracoscopic surgery) Therapeutic image science in radiological image diagnosis for use in remote medical diagnosis (J-ARIS) P: H. Oizumi	13:00	13:10 (p.118) CT Dose reduction technique: dosimetry (378-381) C: T. Mito	13:50 CT Equipment development (382-385) C: K. Kazama	14:30					503
	413 (CyPos)		9:00 MR Breast 1 (3001-3004) C: T. Sasaki	9:30 MR Breast 2 (3011-3013) C: I. Tamura	10:00 MR Myocardium (3021-3024) C: H. Sugino	10:30 MR Cardiovascular (3031-3034) C: I. Yoshida	11:00 MR Sequence evaluation 1 (3041-3044) C: Y. Takatsuki	11:30 MR Sequence evaluation 2 (3051-3054) C: A. Tabuchi							413 (CyPos)
	414+415 (CyPos)		9:00 CT Dual-energy clinical application (3061-3065) C: K. Tsujiko	9:30 CT Dual-energy basic analysis (3071-3075) C: K. Tsujiko	10:00 Radiator Protection Medical safety (3081-3084) C: T. Tobe	10:30 Radiator Protection apparatus management (3091-3094) C: K. Chida	11:00 Radiator Protection dose (3101-3104) C: A. Takimoto	11:30 Radiator Protection dose (3111-3114) C: A. Takimoto							414+415 (CyPos)
416+417	8:00 (p.108) BL 9 (Nuclear Medicine 2) (Knowledge of a color image display required for nuclear medicine domain.) P: S. Matsuda	9:00 Nuclear Medicine PET correction, data base (386-391) C: K. Shimizu	10:00 Nuclear Medicine General: basic (392-396) C: T. Yamamaga	10:50 Nuclear Medicine General: clinical (397-403) C: M. Nakamura				13:10 Nuclear Medicine SPECT: basic 1 (404-407) C: H. Ichikawa	13:50 Nuclear Medicine SPECT: basic 2 (408-411) C: M. Suda					416+417	
Pacifico Yokohama, Annex Hall	F203+F204	8:00 (p.108) BL 10 (Radiation Protection) (Consideration of risk communication for protection of people living in regions as the low dose area.) P: Y. Hirofujii	9:00 Radiation Protection Forum Let's apply the new international basic safety standards (BSS) to the actual issues in hospitals P: M. Hosono, T. Igarashi	10:20 Patient safety Forum The apply and practice of risk management guideline of the site of the first orthopedic dealer in radiation department P: K. Kotaka, H. Hitode	11:20	12:10 (p.113) AL 11 (Radiation Protection 2) (Effects of radiation on the human body: present and future efforts.) P: K. Matsubara		13:10 Radiator Protection Environment Radiation, management, etc. (412-414) C: T. Ito	13:40 Radiator Protection Radiation, management, patient (415-418) C: T. Moritake					F203+ F204	
	F201		9:00 X-ray Angiography: basic, etc. (419-423) C: H. Sato, H. Arimura	9:30 X-ray Angiography: CBCT (424-428) C: Y. Fukunishi	10:00 X-ray Angiography: dose (429-432) C: M. Kato	10:30 X-ray Angiography: image quality (433-435) C: H. Miyata	11:00 RPT DAI Awards Ceremony and Winners' Lectures [JSRT-JSMP Joint Session]	13:10 X-ray Angiography: exposure condition (436-439) C: Y. Takao	13:50					F201	
	F202	8:00 (p.108) BL 11 (Imaging) (Preparation of image processing using C language, and techniques for high performance processing.) P: Y. Okura	9:00 Imaging image evaluation: basic (440-445) C: R. Tanaka	10:00	11:00	12:00 (p.125) Standardization Forum Specification of basic system and technical system for medical image systems on basis of IECN-615 (Japan nuclear society) (446-449) P: I. Kobayashi, Y. Munemitsu, G. Yokouchi	13:00	13:10 JIRA Forum (Quality control of medical display) P: T. Yasuda, Y. Sakamoto, K. Ichikawa	14:10					F202	
National Convention Hall	National Convention Hall	8:00 (p.109) BL 12 (Radiotherapy) (Image guided proton/positron verification and curative strategies.) P: S. Oita	9:00 (p.93) EL 9 (Translational research on BNCT for accelerator-based BNCT) P: M. Suzuki	10:00 56th. Radiotherapy Section Practical application of medical imaging for adaptive radiation therapy	11:00	12:00	13:10 Radiotherapy dose distribution verification (446-449) C: N. Hayashi	13:50 Radiotherapy dose distribution evaluation, risk management (450-453) C: H. Nambu	14:30					National Convention Hall	
	Marine Lobby		CyPos Viewing										Marine Lobby		
Exhibition Hall	Hall A~D		9:30	International Technical Exhibition of Medical Imaging (ITEM) 2014										Hall A~D	