BMJ Open Quality

Rapid response teams for new leaders: a narrative review of global evidence and implementation strategies with a focus on Japan

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To cite: Ogawa A, Tsuchiya Y, Sakemi I, *et al*. Rapid response teams for new leaders: a narrative review of global evidence and implementation strategies with a focus on Japan. *BMJ Open Quality* 2026;**15**:e003949. doi:10.1136/bmjoq-2025-003949

► Additional supplemental material is published online only. To view, please visit the journal online (https://doi.org/10.1136/bmjoq-2025-003949).

Received 20 October 2025
Accepted 6 February 2026

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ABSTRACT

Background Rapid response systems (RRSs) are designed to detect and treat physiological deterioration before cardiac arrest occurs. Since 2020, Japan has seen a rapid increase in RRS adoption; however, most new team members have not received formal training in critical care. This review synthesises international and Japanese evidence supporting implementation and training for new members.

Methods PubMed, Web of Science and Ichushi Web were searched for English or Japanese studies evaluating adult RRSs (January 2010–April 2025). We included 47 records (43 comparative and 4 systematic reviews); the national guideline was not included.

Results Mature RRSs were associated with a 35% relative reduction in unexpected in-hospital cardiac arrests and a 12% decrease in all-cause hospital mortality. However, the evidence is not uniformly positive—systematic reviews and multicentre analyses reported no significant mortality benefit—and outcome heterogeneity limits comparability. Effective programmes share three key features: (1) single-parameter activation criteria augmented by early-warning scores; (2) tiered response models for advanced practice nurses and (3) audit-feedback cycles with dashboards. Crew resource management, in situ simulation and mindfulness-based self-leadership approaches may be associated with reduced decision latency. Emerging tools like deep-learning prediction algorithms, continuous wearable monitoring and tele-support systems may expand coverage but require governance. Common barriers include limited night-time staffing, cultural reluctance to escalate care and medicolegal ambiguity; targeted education and registry-driven feedback mitigate challenges.

Conclusions Well-structured RRSs improve outcomes beyond traditional code-blue models. Aligning activation thresholds, multidisciplinary competencies and data-driven quality improvement cycles with local resources may help new Japanese rapid response team members develop resilient, high-performing services.

INTRODUCTION

Significance and historical context of rapid response teams (RRTs)

Approximately 80% of in-hospital cardiac arrests (IHCAs) are preceded by hours of abnormal vital signs.[1 2] To intercept this pre-arrest phase, rapid response systems (RRSs) link ward surveillance to a multidisciplinary RRT for timely intervention.[3] Yet, optimal triggers, off-hour coverage and digital early-warning integration remain unsettled. This review synthesises international and Japanese evidence and offers practical guidance for new RRT members.

International adoption and key evidence

Implemented in the late 1990s, RRSs spread across Europe, North America and Asia. Mature systems often report ~35% fewer unexpected IHCAs and ~12% lower all-cause mortality.[4 5] In Singapore, activation rose 1.6→14.1/1000 admissions with parallel declines in arrests (2.9→1.7) and intensive care unit (ICU) admissions (8.8→2.0).[6] In the Netherlands, >90% adoption with 24 hours Advanced Life Support (ALS)-certified physician presence coincided with fewer arrests (4.2→2.5/1000), especially in respiratory failure cases.[7] Additional cohorts have reported delayed activation linked to ~50% lower 30-day survival,[8] mortality −48% and cardiopulmonary-arrest calls −76% post-implementation,[9] and arrests falling from 2.2 to 0.8 per 1000 patient-days with an intensivist-led medical emergency team (MET).[10]

Evidence is not uniform; a Cochrane review (~670 000 patients) and a 56-hospital analysis found no effect on mortality.[11 12] Evidence synthesis remains heterogeneous. A bibliometric survey (n=1320) mapped the USA and Australia as central nodes, underscoring the need for context-specific strategies; targeted training, for example, three hospital-wide modified early-warning score (MEWS) workshops, has been linked to success.[9 13]

Adoption and challenges in Japan

The Japanese Society of Intensive Care Medicine (JSICM)'s 2025 guidelines mandate three core requirements for all facilities:

an RRS steering committee, enrolment in the national registry and a minimum of two educational events annually.[14] Uptake now exceeds 70% in urban tertiary centres but remains around 30% in smaller rural hospitals. While countries such as the Netherlands report near-universal RRS coverage, adoption in Japan remains uneven, underscoring the distinct challenges faced by rural facilities.

This disparity is largely attributable to structural barriers in rural hospitals, including chronic staffing shortages, limited access to critical care expertise, financial constraints and incomplete integration of electronic health records (EHRs). These factors hinder both 24 hours coverage and systematic training programmes, contributing to slower uptake compared with that in urban centres. Although registry submissions are increasing, fewer than half contain complete activation or outcome data, weakening the feedback loop. Uneven distribution of intensivists, nurse shortages, variable trigger thresholds, manual (non-EHR) data entry and low executive engagement collectively complicate implementation.

Nonetheless, promising developments are emerging. Leading EHR vendors now embed national early-warning score (NEWS)/MEWS alerts, artificial intelligence (AI) enhanced prediction models are under evaluation and the Ministry of Health is considering performance-based reimbursement for RRSs. However, sustained progress will principally depend on continuous, data-driven visualisation of key indicators and ongoing interprofessional education. Despite these trends, critical gaps remain in translating emerging RRS evidence into practice, particularly in Japan, where implementation has accelerated but structured training and registry completeness continue to lag.

Ultimately, RRT effectiveness depends on the synergy between education, data and safety culture. Nurses, paramedics, rehabilitation professionals and physicians leading future teams must refine early-intervention strategies and cultivate a culture of routine rapid activation. This narrative review synthesises international and Japanese evidence, examines uneven adoption (especially in rural settings) and offers practical guidance for new RRT members amid rapid post-2020 expansion and limited formal training.

METHODS

This narrative review followed SANRA and adopted selected Preferred Reporting Items for Systematic Reviews and Meta-Analyses-S elements to enhance transparency; no protocol was registered. We searched PubMed (MEDLINE), Web of Science Core Collection and Ichushi Web for English or Japanese-language adult RRS/MET studies published between 1 January 2010 and 30 April 2025 (final search 1 May 2025). Grey literature was not systematically searched; the 2025 JSICM operational guideline was targeted a priori for regulatory relevance.[14] Five methodological/guideline papers[15–19] were hand-searched to contextualise implementation and training topics. Eligible designs included comparative primary studies and systematic reviews reporting in-hospital mortality, unexpected IHCA, unplanned ICU admission or activation rates; paediatric and simulation-only studies were excluded. After de-duplication, two reviewers independently screened and extracted predefined variables, resolving disagreements by consensus/third-reviewer adjudication. Forty-seven records met the inclusion criteria (43 comparative primary studies; 4 systematic reviews). The risk of bias was appraised with Risk Of Bias In Non-randomized Studies of Interventions (ROBINS-I) (primary studies) and AMSTAR 2 (reviews). Given the presence of heterogeneity, we conducted a descriptive synthesis. Details are provided in online supplemental materials S1–S6 (search strings/hits=S1; screening flow and counts=S2–S3; extracted fields and risk-of-bias summaries=S4–S5; SANRA checklist=S6).

CORE STRUCTURE, FUNCTIONS AND MEMBERSHIP OF RRTS

Over two decades, RRTs have evolved from ad hoc 'crash teams' to hospital-wide systems detecting early deterioration. Outcomes are driven by who leads routine surveillance, what clinical triggers mobilise the team and how post-event feedback supports iterative learning. Fine-tuning these levers determines response speed and quality.

As summarised in figure 1, the RRS can be divided into three interdependent components: the afferent limb (surveillance and triggers), the efferent limb (immediate bedside response and escalation) and learning and governance (debriefing, education and key performance indicator (KPI)-driven quality improvement). Breakdowns in this afferent limb—such as failure to obtain, interpret or act on abnormal observations—are commonly termed 'afferent-limb failure'. Registry studies suggest that such failures account for a substantial proportion of preventable IHCAs and failure-to-rescue events, particularly when abnormal vital signs are present for several hours without an RRT call or when the first contact with the team occurs at the time of cardiac arrest.[8 20]

While RRTs now operate in 99% of US hospitals, leadership structures vary: residents lead in 45%, nurses in 21% and attending physicians in 19% of cases. Core team members include respiratory therapists (86%), critical care nurses (79%) and physicians or advanced practice providers (APPs) (74%).[21] Activation relies on physiological scoring systems. NEWS is the standard trigger, predicting unplanned ICU transfers and all-cause mortality; its predictive accuracy for ICU mortality declines in patients aged ≥80 years unless hypothermia is included.[22 23] MEWS increases activation rates and reduces arrests but underperforms in detecting respiratory deterioration. Consequently, many institutions have adopted hybrid or single-parameter tools including the Singapore Integrated Tiered Rapid Response Model (SMART), which flags extreme vitals or sudden Glasgow

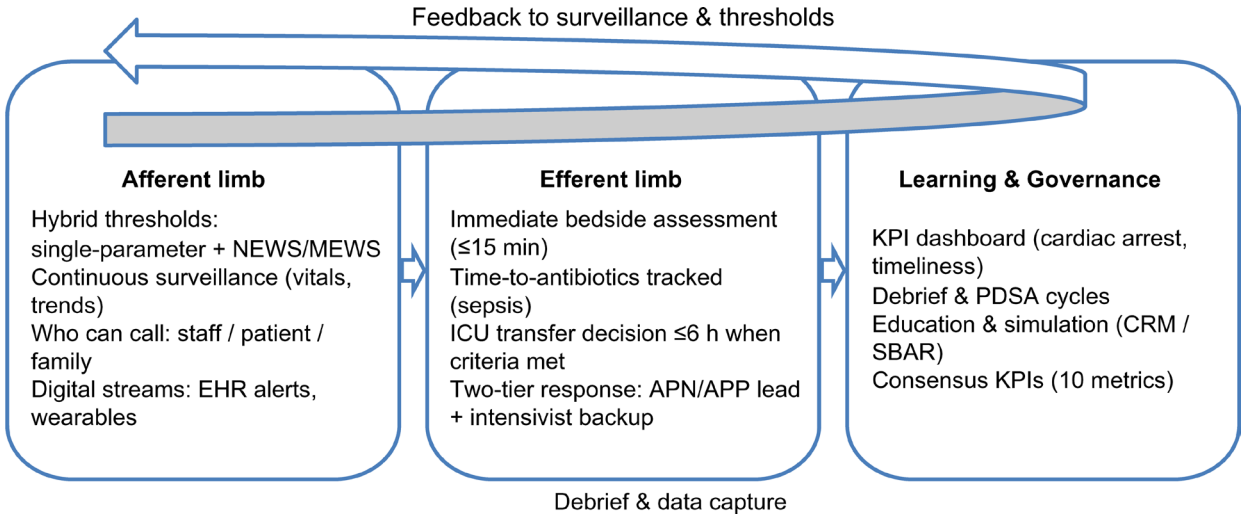

Figure 1 Rapid response system (RRS) logic model. The afferent limb includes hybrid thresholds (single-parameter plus NEWS/MEWS); continuous surveillance; activation by staff, patients or families; and digital inputs like EHR alerts and wearables. The efferent limb covers rapid clinical assessment (≤15 min), time-to-antibiotics tracking (sepsis), ICU-transfer decisions within 6 hours and two-tier responses led by APNs/APPs with intensivist backup. The learning and governance limb integrates KPI dashboards, structured debriefings, PDSA cycles and simulation-based education (eg, CRM and SBAR). Arrows indicate feedback from post-event review to surveillance criteria. APN, advanced practice nurse; APP, advanced practice provider; CRM, crew resource management; EHR, electronic health record; ICU, intensive care unit; KPI, key performance indicator; MEWS/NEWS, Modified/National Early-Warning Score; PDSA, Plan-Do-Study-Act; SBAR, Situation-Background-Assessment-Recommendation.

Coma Scale drops.[6 24] Once activated, the standard sequence comprises rapid assessment, stabilisation and ICU transfer. Post-implementation audits show unplanned transfers rising (2.4% to 4.1%) without corresponding rises in Acute Physiology and Chronic Health Evaluation II scores, suggesting earlier transfers, rather than increased acuity, drive improved outcomes.[25] Additional risk stratification using Sequential Organ Failure Assessment scores, NEWS, thrombocytopenia or lactataemia helps identify patients requiring ICU-level care.[26 27]

Leadership models are shifting from physician-led to nurse-led approaches. One nurse-driven rounding model halved cardiopulmonary arrests and increased survival to 86.5%.[28] Since 2024, some centres have adopted nurse practitioner (NP)-led RRTs to streamline command structures.[29] In contrast to physician-led models in the USA and South Korea, Japan increasingly employs NP-led RRSs owing to physician shortages and regulatory adaptations. Two-tier models, that is, advanced practice nurse (APN) first responder with intensivist backup, efficiently cover nights and weekends.[30] Yet 45% of US hospitals still rely on trainees, with attending physicians present at the bedside only 31% of the time.[21]

Sustained performance relies on continuous learning. When frontline staff assessed outcome data, call volumes increased fivefold and failure-to-rescue rates declined within 2 years.[31 32] Multidisciplinary in situ simulation plus debriefing sharpened communication and clinical decision-making[15]; Japanese guidelines now require at least two such sessions annually.[14] Embedding non-technical skills (NTSs) into routine practice is essential.

RAPID BEDSIDE DECISION-MAKING AND ACTION—LEARNING FROM SUCCESSES AND FAILURES

An RRT's effectiveness hinges on minimising the interval from first sign of instability to definitive treatment, with dependable ICU backup—especially off-hours.

Early escalation is life-saving. Among 756 ward patients with hospital-onset sepsis, ICU transfer within 6 hours reduced mortality, whereas delays ≥6 hour increased the odds of death by 69% (adjusted OR (aOR) 1.69).[27] This underscores that mortality is highly time-dependent, reinforcing the need for clear escalation criteria, adequate ICU capacity and rapid response.

A single full-time APP handled 2.5 times more calls than an ICU resident while achieving comparable time-to-antibiotics and time-to-ICU.[30] Among 449 patients aged ≥75 years, prompt activation reduced 30-day mortality to 5.3%, compared with 33% overall.[33] These findings indicate that APPs can sustain timely care delivery while expanding coverage and that early escalation is particularly vital for older patients, an especially relevant lesson for ageing populations such as Japan's.

Persistent weaknesses remain. Night-time calls carry 1.3-fold higher mortality than day-time calls.[34] Even limited coverage can help; weekday-only RRTs in Korea reduced ward arrests by one-third.[35] These findings have strong implications for Japan, where uneven intensivist distribution and restricted night staffing mirror the vulnerabilities seen in Korea and the USA, highlighting the need for tailored escalation protocols. Activation criteria vary widely; in the USA, over 90% of calls are based on 'clinical concern', but fewer than 50% of hospitals use EWSs.[21] On

a geriatric ward, activating the higher-tier MET quadrupled mortality (aOR 4.04) compared with a lower-tier review call, suggesting escalation occurred too late.[36]

Structured feedback closes the loop. An expanded RRS (ERRS) requiring brief debriefs and monthly quality-improvement meetings cut code rates by 31% in 1 year.[37] Patient-initiated and family-initiated calls provide an additional safety net; acknowledging relatives' concerns improved the appropriateness of interventions without increasing false alarms.[38]

THE POWER OF TEAMWORK AND COMMUNICATION

For second-by-second care, an RRT depends on technical expertise and on a mature 'human infrastructure' of communication culture and non-technical competencies ensuring every voice is heard.

This infrastructure rests on a common language rooted in crew resource management (CRM) and the Situation-Background-Assessment-Recommendation (SBAR) model; structured programmes that teach, assess and reinforce NTSs; and inclusive models that integrate patients, families and ward staff into the safety network.

A shared lexicon based on CRM and the 30s SBAR hand-off unifies clinicians across disciplines. At three tertiary centres, annual multidisciplinary in situ simulation halved information-sharing errors (32% to 14%) and reduced post-ICU protocol deviations by 11%.[15] Similarly, twice-daily 5 min huddles, role-identifying badges and scripted hand-offs at an Australian hospital increased leader recognition from 64% to 87% and decreased conflict reports from 23% to 9%.[39]

Beyond team drills, NTSs, including situational awareness, decision-making and leadership, must be actively coached and routinely audited. An ERRS debriefing every call reduced code-blue events by 31% within 1 year.[37] Mindfulness-based self-leadership training shortened nurses' median time to activate RRTs from 82 s to 49 s without increasing false alarms.[40] This aligns with Neck's feedback-loop model[16] and is supported by improvements in heart-rate variability and lower stress among female clinicians following brief mindfulness exercises.[41] Role clarity also contributes; an APP manages approximately 2.5 times more calls per full-time equivalent than a resident with comparable outcomes.[30]

The safety net expands further when families and ward staff are engaged. Family-trigger protocols improve post-discharge quality of life; at one 500-bed hospital, 78% of family-initiated calls corresponded with NEWS ≥5.[38] Nurse-led critical-care outreach improved ward nurse confidence (42% to 73%) and reduced monthly RRT calls (21 to 14).[29] SMART programme case reviews similarly normalise early activation behaviour.

Concluding, high-functioning RRTs are upheld by a standardised communication framework, continually developed NTSs and inclusive team design. Ultimately, survival often depends more on when patients are escalated than on *whether* they are moved.[25]

CUTTING-EDGE TECHNOLOGY AND THE RRT—DIGITAL TRANSFORMATION AND THE ROAD AHEAD

The late-2020s surge in information and communication technology and AI is shifting RRTs from a reactive posture, 'come when called', towards a predictive framework where live data streams indicate that a call is imminent before anyone initiates it. Current developments fall into predictive algorithms integrated into EWS, real-time surveillance and remote support that extend the RRT's operational reach and data-driven decision-making, replacing intuition with continuously updated metrics.

Predictive algorithms and EWS-AI integration

Conventional scores including NEWS and MEWS are valued for their simplicity but are often criticised for delayed alerts and reduced nighttime sensitivity. Emerging hybrid analytic systems address these limitations. In a 24-bed trauma step-down unit, the Visensia Safety Index halved the duration of serious cardiorespiratory instability (57 to 25 min per admission) and reduced the average number of instability episodes from 4.0 to 2.5. Notably, in 80% of cases, the index triggered before overt vital-sign deterioration.[42] Deep-learning models offer additional precision; the Korean Deep-Learning Cardiac Arrest Risk Score (DeepCARS) predicted cardiac arrest 1 hour in advance with an area under the receiver operating characteristic curve of 0.889, outperforming NEWS (0.771) and maintaining accuracy overnight—when staffing is typically lowest.[17]

EHR 'push' alerts bring this predictive capability directly to the bedside, reducing dependence on human recognition. In one hospital, embedding automated notifications increased annual RRT calls from 405 to 524, while cardiac arrests dropped from 14 to 2, and ward mortality dropped from 8.1% to 6.5%.[43] Similarly, a 10-centre trial of IntelliVue Guardian monitors showed improved outcomes, with post-RRT survival increasing from 86% to 92% and median hospitalisation decreasing from 3.4 to 3.0 days.[44]

Real-time data monitoring and remote support

Continuous wireless sensors stream physiologic data often missed between routine checks. In a randomised trial involving 60 ward patients, this technology detected 103 high-MEWS episodes occurring entirely between scheduled nurse rounds, enabling significantly earlier deterioration recognition.[45] Japan is piloting EHR-integrated alerts; cost/interoperability barriers are sharper in smaller regional hospitals. Meanwhile, distance no longer limits access to expert input; tele-RRT systems allow intensivists to participate in real time from off-site electronic or tele-ICUs. In one rehabilitation hospital, combining clearer overhead announcements with standardised crash carts and pre-assigned roles reduced the percentage of staff who could not hear a rapid-response call from 53% to 7%. All respondents reported knowing exactly what to do.[46]

Data-driven decision-making and the quality-improvement loop

Hospitals are increasingly visualising streaming data on dashboards integrated into plan-do-study-act (PDSA) cycles. At one centre, the median time from RRT activation to treatment decreased from 22 to 14 min after implementation of the Visensia index on a ward-level dashboard; a result that supported funding for dedicated night-shift APNs.[42] However, algorithm bias remains a critical concern. The DeepCARS team addresses this by displaying sensitivity curves and false-positive rates stratified by age group, allowing clinicians to adjust thresholds in real time. This 'clinician-in-the-loop' model, where AI outputs are reviewed before implementation, becomes central to the safe integration of predictive systems into bedside care.

Future outlook—towards a self-learning RRT

Three trajectories are emerging: adaptive EWS systems in Europe are dynamically adjusting thresholds based on seasonal trends and ward case-mix; National Institutes of Health-backed platforms are integrating vitals, labs, imaging and free-text nursing notes to forecast instability up to 24 hours ahead; and extended-reality headsets allow remote experts to project 3D guidance into the bedside field, supporting procedures without travel.

Technology is an aid, not a solution; only when digital systems, team coordination and governance mature together can next-generation RRSs reach their potential.

Yet, several limitations remain. Most AI validation studies are single-site and retrospective, limiting generalisability. Bias and false positives may trigger unnecessary activations and contribute to alarm fatigue. Over-reliance on alerts could reduce clinical awareness and judgement. Cost-effectiveness is uncertain, especially in smaller or resource-limited hospitals. EHR integration and alignment with local culture are not guaranteed, underscoring the need for phased evaluation and clear oversight.

CHALLENGES AND SOLUTIONS IN IMPLEMENTING AND SUSTAINING RRTS

Resources, costs, staff burden and organisational culture

Night-time coverage and resource constraints

In a Japanese multicentre registry, most hospitals had fewer than 15 RRT/MET calls per 1000 admissions, and 6.9% of activations involved cardiac arrest, indicating late escalation.[20] At Seoul National University Hospital, potentially preventable arrests rose from 17.9% during operating hours to 31.6% overnight when the RRS was inactive.[47] Full 24 hours coverage is ideal but often impossible in small-sized or mid-sized institutions. Still, daytime-only RRTs significantly reduced ward arrest rates, making limited-hour services a viable first step.[35]

The combination of low activation rates and a relatively high proportion of calls for cardiac arrest in the Japanese registry is consistent with ongoing afferent-limb failure, whereby surveillance mechanisms detect only the sickest patients and many deteriorate to arrest before escalation.[20] As coverage expands, standardised monitoring of delay-related afferent-limb metrics—such as the proportion of ward arrests with documented abnormal vital signs but no preceding RRT call, median time from trigger to activation and the ratio of cardiac arrests to total activations—could provide a pragmatic starting point for local quality-improvement cycles and national benchmarking.[19]

Staff fatigue and hierarchical culture

Over-sensitive triggers can cause 'alarm fatigue', overwhelm teams with low-yield calls and damage credibility.[18] A Singapore national survey found barriers of understaffing, unclear role boundaries between ward and response teams, and worries about ward staff being deskilled.[48] Night responses led only by junior doctors without senior oversight increased the risk.[49] Two-tier structures or providers leading first response with remote intensivist backup have filled this supervisory gap. APP-led teams manage approximately 2.5 times more calls per full-time equivalent than resident-led ones, with similar outcome performance.[30]

Sustaining RRT performance over years requires deliberate attention to workforce well-being and retention. In many hospitals, rapid-response duties are layered onto already heavy clinical workloads, exposing staff to repeated high-stakes events and decision fatigue. Mindfulness-based self-leadership and other brief interventions have been shown to shorten activation times without increasing false alarms and to improve physiological stress markers among clinicians,[40 41] but they are most effective when embedded within broader organisational strategies. These include protected time for simulation and debriefing, access to psychological support after difficult cases, and clear career pathways for rapid-response nurses and advanced practice providers. Integrating such elements into competency frameworks and appraisal systems can help prevent burnout and preserve the highly skilled clinicians on whom RRSs depend.

The overlooked small-hospital sector

Experiences from resource-constrained and low- and middle-income countries (LMICs) mirror these challenges. In an Egyptian tertiary hospital and several Asian cohorts, introducing even relatively small-scale RRS programmes in settings with constrained ICU capacity produced large relative reductions in ward arrests and sepsis-related mortality.[9 25 35] These data suggest that the marginal benefit of early ward-based intervention may be greatest where ICU beds, intensivists and telemetry are scarcest. Rural and regional Japanese hospitals share many of these structural constraints; adapting LMIC-style strategies—such as daytime-only coverage, nurse-led outreach and tele-RRT links to larger centres—may therefore yield disproportionate gains despite limited resources. Among 971 acute-care hospitals in Japan, 23% of those with ≤200 beds reported no RRS, and only 2% had a full RRT, with staff shortages, lack of onsite supervision

and inadequate structured education cited as the main barriers.[50] By contrast, many small US hospitals already run METs led by residents or trainees, underscoring the sharper workforce and training constraints that make Japanese small hospitals both vulnerable and high-yield targets for phased RRS expansion.

Continuous improvement through KPIs and the PDSA cycle

Improvement starts with measurement. A global consensus established 10 structure, process and outcome KPIs for RRSs and urged their consistent adoption.[19] In Japan, refining triggers improved metric sensitivity; adding one parameter, respiratory rate ≥26 breaths per min with fraction of inspired oxygen ≥30%, raised odds of ICU transfer more than 40-fold (aOR 40.5, 95% CI 7.1 to 231).[51] Embedding KPIs into daily/weekly dashboards fuels PDSA cycles, engages leadership and links quality gains to budget reinvestment.

Legal, ethical and informed-consent considerations

Every RRT activation offers a chance to clarify treatment limits. At the same time, linking RRT activity to timely goals-of-care discussions and documentation of do-not-attempt-resuscitation orders helps protect patients from non-beneficial interventions at the end of life while supporting families and staff. After the adoption of an RRS in a Korean hospital, new do-not-resuscitate directives nearly doubled, likely averting further arrests.[52] In Japan, family-attended conferences at activation have become standard for older patients, aligning interventions with values. National benchmarking via data sharing was stifled by inconsistent consent forms until the JSICM guidelines in 2025 allowed disclosure via posters and websites, increasing registry entries by approximately 20%.[14]

Beyond documenting resuscitation status, mature RRSs are increasingly linked with hospital-wide end-of-life and palliative care pathways. Rapid-response calls often occur at a turning point in the illness trajectory, when it is uncertain whether further escalation will meaningfully change prognosis. Incorporating structured goals-of-care conversations and advance care planning into the RRT workflow—either at the bedside or within a follow-up family conference—helps distinguish reversible deterioration from expected end-of-life decline, prevents non-beneficial ICU transfers and ensures that symptom relief and comfort are prioritised when appropriate. In Japan and other culturally conservative settings, explicitly positioning RRT activation as an opportunity to clarify patient and family values can reduce moral distress and reinforce that RRSs are intended to support, rather than override, appropriate end-of-life trajectories.

Roadmap for overcoming persistent barriers

A phased, reinforcing strategy is emerging. Concentrating staff between 17:00 and 23:00, when deterioration peaks, can reduce arrests without full night coverage.[35] Assigning APNs or APPs as night leaders, backed by off-site intensivists, addresses workforce gaps and reduces secondary calls, easing alarm fatigue.[30] Cultural resistance can be encountered via role badges, short huddles and family-initiated calls to normalise early activation. KPI-linked dashboards maintain transparency, sustain PDSA cycles and support further investment. Coupled with routine goals-of-care reviews, these innovations shift RRTs from reactive responders into learning systems that reflect patient values.

CONCLUSION

RRS effectiveness hinges on early activation, clear roles and continuous feedback. Across settings, calibrated triggers, tiered nurse-led responses with intensivist backup and KPI-driven learning are associated with fewer arrests and improved survival.[27 30] Predictive analytics, continuous monitoring and tele-support can shorten time-to-treatment and extend reach, but safe use requires governance, clinician-in-the-loop oversight and workflow alignment.[17 43 44 53] For immediate practice, routine respiratory-rate checks, brief team huddles and short debriefs translate culture into outcomes.[39] In Japan, focusing resources on evening peaks, registry-linked dashboards and structured debriefs offers pragmatic gains while addressing workforce and legal barriers.[14 19 35] Aligning international best practice with local staffing and KPI infrastructure can help new RRT leaders build resilient, self-learning systems.

Contributors AO conceived and designed the literature search, conducted the comprehensive database screening and drafted the manuscript's narrative structure. YT and IS independently screened titles and abstracts, extracted study-level data and assisted with the risk-of-bias assessment. NK defined the overall review scope, provided clinical oversight and served as the guarantor of the work. All authors critically revised the manuscript for significant intellectual content and approved the final version.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Not applicable.

Ethics approval Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

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