QUALITY BUSINESS LEADERSHIP by qba

After Action Reviews (AARs)

From Compliance To Strategic Influence

A Practical Guide to Quality Business Leadership

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This practical guide to Quality Business Leadership (QBL) has been co-created by more than 100 QBL Alumni in partnership with the RKI Institute. Learn more about QBL at www.qbaleaders.com. Learn more about the RKI Institute at www.rki-institute.com.

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Table of Contents

FOREWORD

EXECUTIVE SUMMARY **1**

1. PURPOSE, SCOPE & DEFINITIONS **3**

Purpose 3
Scope 3
Definitions 4
Abbreviations & Acronyms 4

2. WHEN TO TRIGGER AN AAR **4**

Guiding Principles 4

3. END-TO-END AAR PROCESS **5**

1) Trigger Event: Embed AAR in the flow of routine work 6
2) Right-size & plan the AAR 7
3) Conducting the AAR reflection 9
4) Identify & prioritize lessons & actions 10
5) Triage for PQS impact 12
6) Communicate lessons and embed for learning & impact 13
7) Track progress & impact 14
8) Celebrate, scale & improve 14

4. ROLES & RESPONSIBILITIES **15**

5. TRAINING & COMMUNICATIONS **16**

6. TIPS & COMMON CHALLENGES: ADVICE FROM THE FRONT LINES **17**

7. CONCLUSION **17**

APPENDIX 1: AAR GROUND RULES

APPENDIX 2: AAR METRICS

APPENDIX 3: AAR ROLES AND RESPONSIBILITIES

APPENDIX 4: AI OPPORTUNITIES FOR AAR

AAR TOOLKIT

AAR Toolkit: AAR Record (template)
AAR Toolkit: AAR Tracking – Follow Up Through to Effectiveness Check (template)
AAR Toolkit: Management Review AAR Assessment (template)

Foreword

Many companies profess to conducting After Action Reviews (AAR), but very few actually *learn and adapt*, by implementing the lessons learned from the AAR in a structured way. This guide can help companies close this gap by providing a full end-to-end process for initiating, conducting, and institutionalizing learning from AARs.

The guide is written by alumni of the Certificate in Quality Business Leadership (QBL) Program, in partnership with the RKI Institute. It is based on extensive experience within the biopharmaceutical industry and benchmarking best practices from across other knowledge-based organizations and industries, including NASA and the U.S. Navy, that have been using AARs since the 1970s. The QBL Program is accredited by Technological University of Dublin (TU Dublin), Ireland, as part of the *Leadership in Life Sciences* MBA program co-developed by the Graduate Business School and the School of Chemical and Biopharmaceutical Sciences. Data from more than 100 pharmaceutical industry and regulatory agency senior leaders in the Certificate in QBL Program show that while the majority of participating companies and agencies conduct AARs in a psychologically safe environment, few have a structured process for sharing lessons learned broadly or to include them in the Pharmaceutical Quality System (PQS) processes. Said differently, companies make the effort to gather data and discuss the lessons learned, but leave it as 'good to know' amongst people attending the AAR. They don't take the final step to also implement the new knowledge and insights in an intentional, structured, repeatable manner. This is a significant missed opportunity to improve processes, avoid re-learning what has been learned, enhance employee engagement, and improve financial performance of the company.

AAR is part of the Knowledge Management curriculum for the QBL trait *Make Risk-Informed Decisions That Benefit Patients* in the Certificate in QBL Program education, one of the 6 QBL traits as shown in the figure below.



QBL represents a transformative approach where Quality leaders act as Strategic Business Leaders rather than reactive compliance enforcers, driving sustained product quality, reliable supply, and enhanced financial performance.

This guide is taking a practical approach to AAR and includes tips, checklists and templates in addition to the end-to-end AAR process.

Executive Summary

After Action Reviews (AARs, or more generically, *lessons learned*) are structured and scalable learning conversations that help organizations improve quality, reliability, and execution by converting experience and insights into reusable knowledge and tangible actions. In Good Manufacturing Practice (GMP) and Good Distribution Practice (GDP) environments, AARs can help facilitate a culture of learning and continuous improvement and complement investigations, CAPA, and risk management, by focusing on how work is executed and decisions are made, enabling teams to repeat success and prevent recurrence of issues.

This guide provides a simple, end-to-end AAR framework designed for practical applications. It emphasizes:

- Timely reflection to identify lessons embedded in routine work
- Clear, prioritized lessons are linked to improvement actions
- Closed-loop implementation and tracking of improvement actions, and furthermore:

DIMENSION	FROM TODAY'S REALITY	TO DESIRED FUTURE STATE
WHEN AARs HAPPEN	⊖ Infrequent, ad hoc ⊖ Reactive, often only after major problems	✓ Routine, timely, scalable ✓ Proactively embedded in workflows
PURPOSE & MINDSET	⊖ Seen as post-mortems or quasi-investigations; used to assign fault or blame; ⊖ Used to fulfill documentation requirements ⊖ Risk-averse ⊖ 'We do AAR because we must'	✓ Agile and learning-focused; psychologically safe ✓ Continuous improvement-oriented ✓ We trust that benefits will follow ✓ 'We do AAR because we want to'
QUALITY OF LESSONS	⊖ Generic, vague, or biased ⊖ Difficult to apply, reuse, or scale	✓ Inclusive, clear, actionable, prioritized lessons grounded in facts, assumptions, and system conditions ✓ Easy to apply, reuse, and/or scale
WHAT HAPPENS TO LESSONS	⊖ Lessons learned not implemented ⊖ Not well communicated to other parts of organization ⊖ Scattered, siloed lessons go to Excel (or SharePoint) to die	✓ Systematically triaged, prioritized & acted upon with full implementation ✓ Proactively communicated to relevant audiences across the organization ✓ Embedded into standard work, the PQS and curated for reuse in a repository
BUSINESS IMPACT	⊖ Lessons rarely drive real change ⊖ Limited visibility or value	✓ Lessons drive behavior and process change, inform KPIs, support enhanced quality and financial performance, and improved supply ✓ Value is visible and appreciated

This guide addresses roles, expectations, metrics and governance, provides ready-to-use AAR templates and highlights tips and best practices throughout. It also includes opportunities to use AI to reduce friction in capture, synthesis, retrieval, and implementation tracking, with guardrails suitable for regulated environments.

The intent is to move organizations from discussion of lessons to systematic implementation of meaningful improvements based on these lessons, thereby strengthening quality systems, operational performance, and supply reliability.

Key Concept



AAR is *how* organizations can move from *firefighting* to **fire prevention**

1. Purpose, Scope & Definitions

Purpose

The purpose of AARs is to strengthen performance and quality outcomes by creating a structured, repeatable, and scalable mechanism to:

1) Capture learnings from both routine and unplanned activities
2) Convert insights into clear recommendations and actionable improvements
3) Improve knowledge management by embedding learnings into standard work, training, and processes – both PQS and beyond
4) Leverage knowledge and experience to prevent re-learning on reoccurrence of mistakes
5) Improve organizational performance and quality culture, and reduce variability in execution

Ultimately, AAR effectiveness is measured by implementation of actions and impact on performance - not the AAR discussion alone.

Tip / Best Practice #1



AARs help convert experience and insights (i.e., tacit knowledge, or know-how) into reusable, documented knowledge and actions (explicit knowledge) that improves right-first time execution and improves decision making, reduces subjectivity, supports continual improvement across the product lifecycle, and enhances company financial performance.

Scope

AAR is a foundational improvement methodology with broad application:

- Applies across the value chain to all functions involved in pharmaceutical and biopharmaceutical development manufacturing, including manufacturing operations, Manufacturing Science & Technology (MS&T), analytical development teams, QC/QA, engineering/maintenance, supply chain, procurement, digital/IT, and supporting functions.
- Covers routine GMP and GDP events (e.g., shift handoffs, problem-solving meetings, projects, batch campaign production, process validation, aseptic process simulation, batch release for distribution, lane risk assessments, GMP and GDP risk assessments, vendor/customer qualifications) through major events (e.g., critical deviations, inspections, launches, recalls, technical transfers, large shutdowns, temperature excursions).
- Includes both negative outcomes (issues, failures, near-misses) and positive outcomes (exceptional performance, right-first-time execution, successful inspections).

- Lessons and actions may impact any aspect of the business, including practices, processes, and procedures, as well as associated mindsets, behaviors, and training across all functions.

Definitions

- **AAR (After Action Review):** An intentional, structured reflection to convert experience into actionable learning.
- **Action:** A specific task with an owner and due date to implement a lesson.
- **Lesson:** A reusable insight that changes how work is performed (e.g., behavior, process, tool, decision rule, failure mode).

Abbreviations & Acronyms

AI – Artificial Intelligence
CAPA – Corrective Action Preventative Action
COP – Community of Practice
CQV – Commissioning, Qualification & Validation
CSV – Computer Systems Validation
GDP – Good Distribution Practice
GMP – Good Manufacturing Practice
HQ – Headquarters
KM – Knowledge Management
KPI – Key Performance Indicator
MS&T – Manufacturing Science & Technology
PPQ – Process Performance Qualification
PQS – Pharmaceutical Quality System
QBL – Quality Business Leadership
QC/QA – Quality Control / Quality Assurance
QMS – Quality Management System
SOP – Standard Operating Process
TU Dublin – Technological University Dublin

2. When to Trigger an AAR

Guiding Principles

Trigger an AAR when there is a meaningful learning value and when timely reflection can help improve future performance. The following principles can help identify when and where to trigger an AAR:

When an outcome deviates from expectations - positive or negative

- Examples:
  - Unexpected result (positive or negative)
  - Deviation or near miss
  - Recurring issues or systemic patterns
  - Unforeseen risk, delay, missed objectives, or cost overrun
  - Breakthrough successes beyond expectations

When the learning value to the organization outweighs the effort - when there is something worth learning that could inform future decisions, work, or outcomes, or learning broadly affects others across the organization.

- Examples:
  - Recurring issues or patterns
  - Cross-functional handoffs or coordination challenges
  - First-time, rare, or complex activities
  - Decisions or risk assessments made under high uncertainty

When impact is high – or could have been. Capture the potential learning to protect or create value.

- Examples:
  - Inspection outcome or regulatory interaction
  - Product quality issue or market action
  - Technology or product transfer, scale-up, major project completion, or change implementation
  - Product launches
  - Crisis response (e.g. natural disaster, cyberattack, etc.)
  - Exceptional performance or other strong, positive outcomes
  - Clinical stage transition (i.e., from Phase 3 to commercial manufacturing)
  - Major change initiatives, including organizational restructure / redesign
  - Temperature excursion handling

Tip / Best Practice #2



Organizations typically think about capturing lessons when things go poorly, or after a crisis or long project, and fail to focus on the many positive outcomes happening on a regular basis. Capturing successes is another way AAR can benefit the business, as a means to identify, codify, and share proven practices and proactively drive learning and improvement. Benchmarking suggests some companies in other industries seek a 10:1 ratio of positive learnings to negative.

3. End-to-End AAR Process

Figure 1 is an outline of the QBL & RKI 8-step end-to-end AAR process. While organizations often focus disproportionately on the AAR reflection (step 3) & lessons identification (step 4) part of the process, few in fact do anything about the new insights (Steps 6-8). The 8-step process presented in Figure 1 includes all steps from trigger event/activity to tracking progress/impact, and to celebrate, scale & improve. Each step is discussed below.

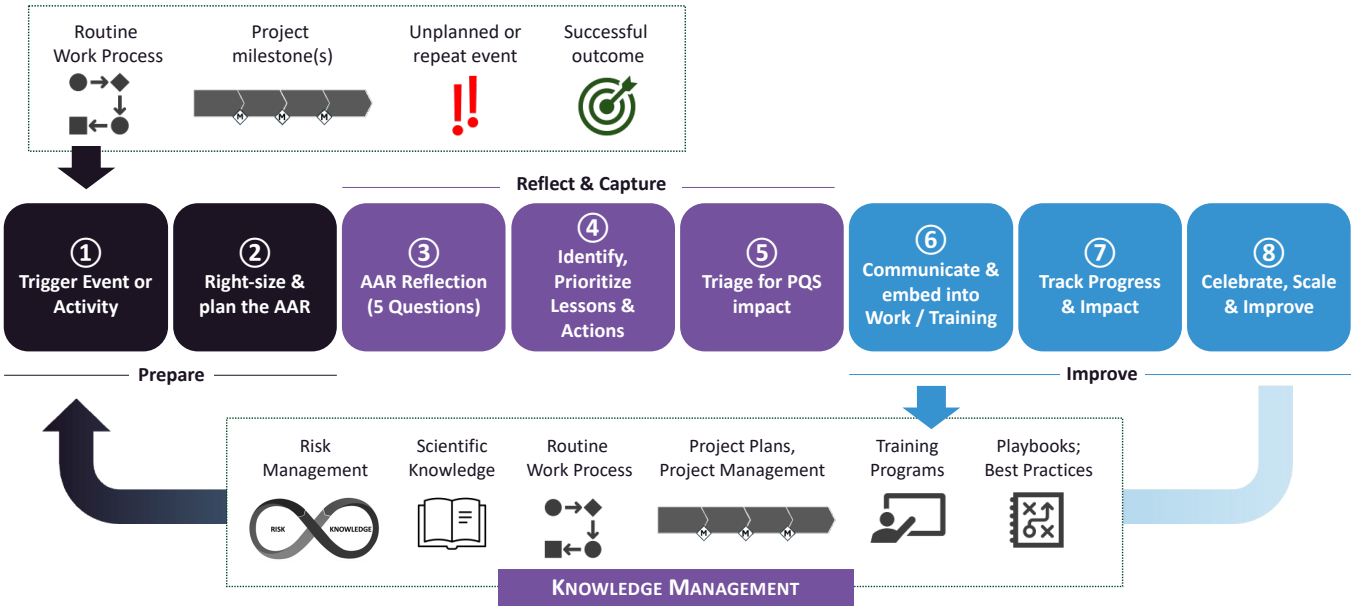

Figure 1 - The End-to-End AAR Process

1) Trigger Event: Embed AAR in the flow of routine work

The following are illustrative triggers for embedding AAR *in routine work* (GMP and GDP)

- Batch campaign close-out (especially where performance differs from historical expectations)
- Major change implementation (equipment, process, materials, or digital systems)
- Tech transfer milestone or first-time execution at a receiving site
- Process validation milestones (e.g., PPQ completion, requalification outcomes)
- CQV / CSV activities (post-execution)
- Product launches
- Project stage gates (e.g., facility build, major IT system implementation)

The following are illustrative *event-based* triggers for conducting an AAR

- Deviation or investigation with cross-functional complexity or recurrence risk
- Internal/external audits, regulatory inspections outcome, or significant regulatory interactions
- Supply disruptions or material impact to scheduling or throughput
- Temperature excursions with potential product impact
- Significant safety events or near-misses
- Complex problem-solving meetings or workshops

Organizations often focus AARs on negative events. However, high-performing organizations also intentionally trigger AARs to capture and replicate success, including:

- Right-first-time execution under challenging conditions (e.g., new operator cohort, compressed timelines)
- Exceptional inspection/audit outcomes (few/no observations; strong regulator feedback)
- Effective contamination control responses, rapid containment, or escalation
- Breakthrough improvements (e.g., yield, cycle time, OEE, deviation reduction) with replication potential
- high-risk activities completed successfully due to effective controls

Tip / Best Practice #3



AARs on positive outcomes identify the conditions, decisions, and behaviors that enabled success, allowing them to be repeated across shifts, sites, and functions – improving understanding, performance, and resilience.

These interventions should be codified into the standard work process as a required activity at the right point in the process (e.g., a requirement to advance to the next stage of the tech transfer) – this is **key to ensure AARs are treated as part of routine work, rather than a discretionary or retrospective activity.**

Tip / Best Practice #4



Wherever possible, embed the AAR into existing operational activities, such as in tier meetings, project activities, weekly meetings, governance reviews, project management, etc. to minimize perceived burden and enable timely reflection.

Tip / Best Practice #5



Define which events will trigger an AAR in your organization and include these trigger events in relevant documents including in the PQS to ensure they become part of your quality processes.

2) Right-size & plan the AAR

Choosing the right level of AAR rigor

The level of effort for an AAR should be proportional to the context, potential impact, and learning value of the event or activity. The following table provides guidance on selecting the appropriate level of AAR rigor. These guidelines allow a high degree of flexibility for right-sizing AAR efforts based on the potential impact. These guidelines should not replace existing processes for investigation or robust root cause analysis and the implementation of corrective or preventive actions. Across all AAR types, the same five standard AAR questions apply (see Section 3), ensuring a consistent approach to reflection, learning, and action regardless of the level of rigor.

Table 1 - Tips to Right-size an AAR

AAR PATHWAY	MICRO AAR	STANDARD AAR	EXTENDED AAR
DURATION	**~5-15 minutes**	**~30-60 mins**	**Several hours**
WHEN TO USE	End of shift, tier huddle, problem-solving meeting, daily management	Project milestones, deviations, investigations, batch reviews, change implementations, campaign close-out	Major incident, inspection, launch, cross-site failure/success, tech transfer, recall; Events considered high impact on the business
INPUTS PRIOR TO THE AAR	None, beyond context of the subject meeting	Gather facts, identify participants	Identify participants, define scope and assumptions, gather facts on the difference between what was supposed to happen and what did happen
FACILITATION	Verbal, group led following standard questions	Structured discussion with trained facilitator	Structured discussion with trained facilitator, ideally someone independent from the triggering event
PARTICIPATION	Local team	Cross-functional team	Cross-functional, cross-site, divisional/HQ as required
OUTPUTS	Quick "just do it" insights (i.e., 1–2 key insights and actions – or no action at all)	Top lessons & actions + owners + PQS triage	Validated lessons, cross-site or systematic actions, governance review
EFFECTIVENESS CHECK	Basic follow up on planned actions to confirm action item closure	Verification that actions are implemented and embedded into processes; confirmation of clarity and usability; consider tracking at Management Review (nominally for PQS-related lessons and actions).	Same as *Standard* but expressly tracked at Management Review for full implementation and no recurrence (consider linking to CAPA effectiveness process)

Plan the AAR ☐ Micro AAR ☑ Regular AAR ☑ Extended AAR

- Gather relevant facts and data to support an objective reflection with minimal subjectivity and identify necessary participants. As a rule of thumb, it is better to err on the side of inclusion when selecting data input and participants to ensure diverse perspectives, strengthen analysis, and support alignment on outcomes.
- For Extended AAR, further preparation is typically necessary, which may further include clear delineation of scope and assumptions, any pre-read materials for the team to review, and in some cases, a pre-AAR survey to help ensure difficult issues get raised (i.e., using the survey as a tactic to increase psychological safety for participants).

Tip / Best Practice #6



Decide which AAR trigger points will be Micro, Standard or Extended AAR – adjust as needed based on context.

3) Conducting the AAR reflection

AAR Reflection ☑ Micro AAR ☑ Standard AAR ☑ Extended AAR

- Review the AAR ground rules, to be clear on purpose and foster a safe environment to speak up. The AAR should not be a top-down exercise and should provide opportunity for everyone to contribute. A sample set of ground rules is provided in *Appendix 1: AAR Ground Rules.*
- Clarify / align on scope as necessary.
- Regardless of the AAR pathway, the same, five standard questions apply and should be asked in sequence, as depicted in Figure 2.
- Document the outputs for each question (to keep Micro AAR as efficient as possible, focus primarily on capturing the actions). Focus should be on gathering facts, not opinions. For each of the five questions the facilitator should summarize the facts discussed and ask the attendees 'do we have all relevant data?' A sample AAR reflection template is provided as part of a toolkit, in *AAR Toolkit.*
- As a rule of thumb, a majority of the time allocated should be focused on Question 3 (understanding why differences occurred and what worked well/not well) as this is the primary source of actionable learning.

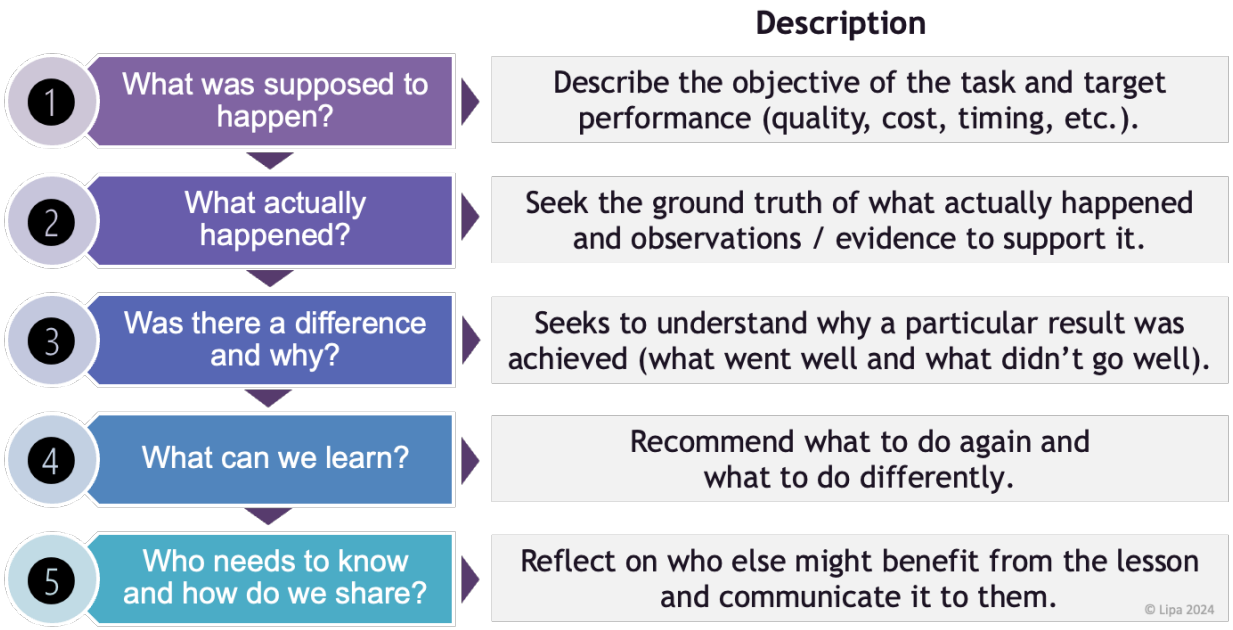

Figure 2 - The Five AAR Questions

Tip / Best Practice #7

For Questions 1 and 2 strive for objectivity and clarity. For Questions 3 and 4 focus on facts and key learnings. Ensure that all attendees participate. For Question 5 agree on how the lessons learned will be shared.

Tip / Best Practice #8

In identifying lessons during Questions 3 and 4, do not limit actions solely to opportunities to improve a business process. As prompted by Question 3 (*Was there a difference **and why**?*), understanding why something happened (or did not) can enable critical learnings relevant to advancing scientific knowledge and understanding, risk management, and human performance.

Consider for example a scenario where operators complete a setup incorrectly leading to a deviation. Why did this happen? Is it truly human error or can more be done to improve the process and the understanding of why the setup is important? Capture these insights as well and take action accordingly.

Codifying such learnings will also provide substrate for search and AI capabilities to surface this knowledge to support future investigations.

4) Identify & prioritize lessons & actions

Identify Lessons ☐ Micro AAR ☑ Standard AAR ☑ Extended AAR

- With the lessons identified, further refine into specific recommended action(s). This step should ideally be done during the AAR, with limited offline follow-up only

as needed to finalize details. Characteristics of high-quality lessons / recommended actions should be:

- Written as clear, actionable statements, such as decision rules, guidance, updates to standard work, enhancements to training (etc.), and not vague statements
- Scalable and reusable beyond a single product, site, or function where applicable
- Include explicit conditions for applicability (i.e., under what conditions does the lesson apply, and when do they not apply?)
- Define required key behavioral or process changes
- Include ownership and implementation requirements, including linkage to relevant quality systems
- Include defined timelines for completion

Prioritize Actions ☐ Micro AAR ☑ Standard AAR ☑ Extended AAR

- Lessons and associated actions should be prioritized to the highest impact improvement opportunities.
- The criteria for improvement are at the discretion of the organization and should include consideration of core concepts like patient safety, product quality, compliance, uninterrupted supply / product availability, process robustness, risk reduction, PQS enhancement, and financial considerations.

A structured approach for assessing PQS impact and appropriate routing is provided in the next step of the end-to-end AAR process.

Tip / Best Practice #9



Consider using a prioritization level (e.g., high, medium, low – or similar) when capturing actions. Include owner and timeline for completion.

5) Triage for PQS impact

Triage for PQS impact ☐ Micro AAR ☑ Standard AAR ☑ Extended AAR

- The company should treat AARs as a knowledge management process for organizational learning that can be managed either outside or within the formal PQS. Regardless of structure, management of actions arising from AAR (e.g. updates to SOPs, risk assessments, CAPA, change controls, etc.) should be robust and transparent to management.
- Figure 3 outlines a structured decision framework to evaluate impact to PQS. Rationale should be captured as part of the AAR record.

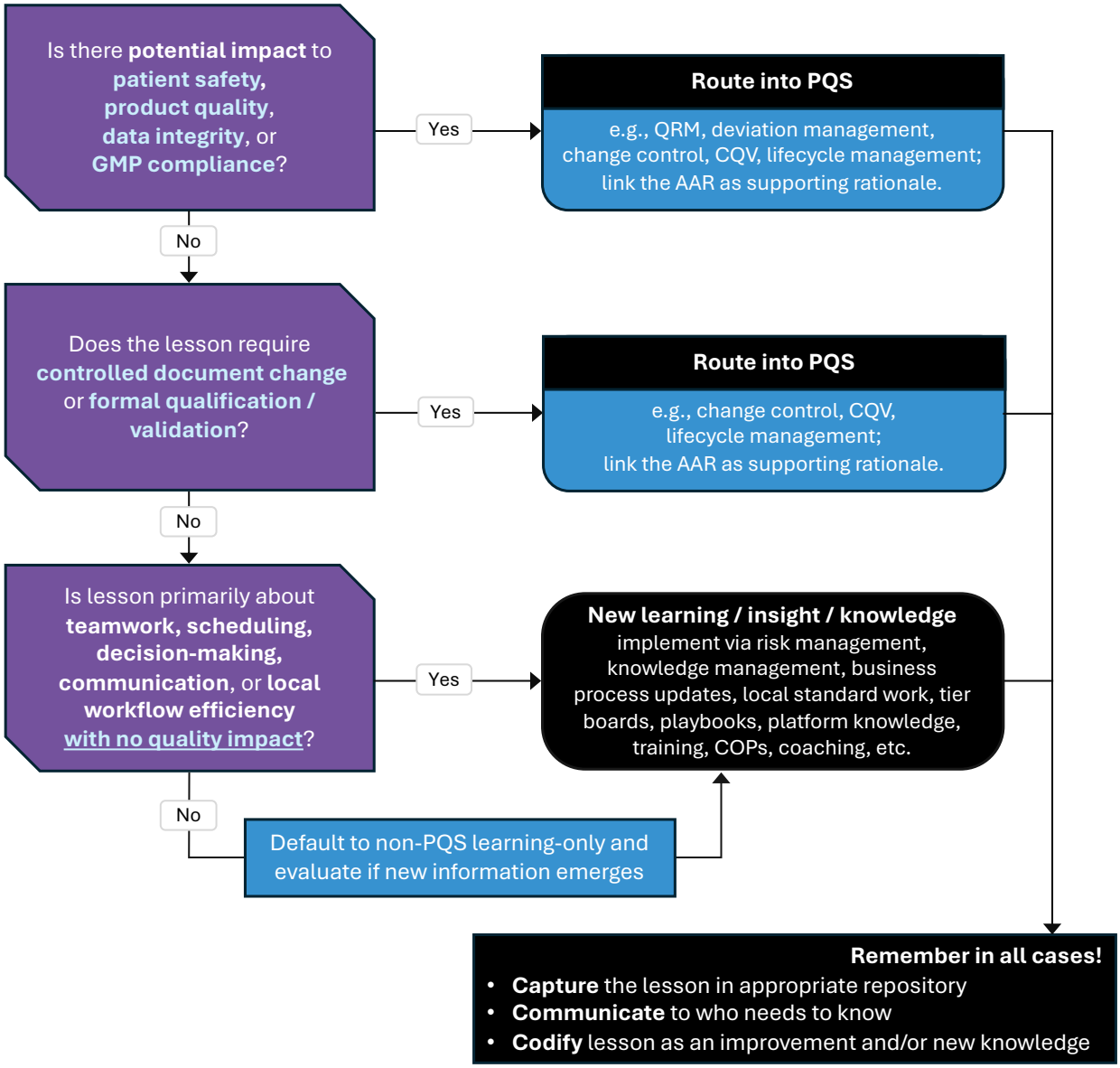

Figure 3 - Triage of Lessons for PQS Impact

Tip / Best Practice #10



The ICH Q10 objective to include continual improvement in the PQS should be considered when deciding where lessons learned and associated actions should be documented and tracked.

6) Communicate lessons and embed for learning & impact

Routing lessons for impact ☐ Micro AAR ☑ Standard AAR ☑ Extended AAR

- Considering the concept that a "lesson isn't truly learned until it drives a change in behavior or action," the desired outcome once a lesson is identified is to build it back into the standard work (e.g., PQS, business process, checklist, training) that guides how daily work is done – to ensure learning is operationalized, scaled, and sustainable.
- Lessons should also be considered for their impact across the organization, considering best practices, guidelines, playbooks, etc.; project planning and project management; training programs; employee onboarding process and content; scientific knowledge (e.g., product, process, platform), and risk management, as a means of proactive knowledge management (e.g., hazard libraries, risk review) .
- All lessons should be captured in a curated knowledge repository as part of an organization's knowledge management capability.
    - Such a repository may be one of platform knowledge base about a technology, process, or unit operation; a community of practice; a technical knowledge repository about a product; or similar well known and well-maintained storage location. Importantly, the lesson should be made available via the organization's search capability for increased findability.
    - The lesson should be tagged to enable retrieval and reuse across the organization.
    - Advanced tools (including AI) and other techniques will furthermore allow the organization to push lessons to those who may need them, based on an understanding of their work.
        - Even when a lesson is successfully embedded in standard work, it should still be added to the curated lessons learned repository as a record and noted as implemented, in case it may be applied to other areas not immediately recognized.
- If a lesson is local and/or transient (e.g., truly a one-off or a process that will no longer be run), it should be acted on with minimal overhead.

Communicating Lessons ☐ Micro AAR ☑ Standard AAR ☑ Extended AAR

- Lessons are inherently communicated when a process or training is updated, through the associated documentation and/or training activities.

- Consider organizational level of communication needed; lessons should be communicated and made visible broadly – ideally as a "push" to those who are doing similar work to ensure timely notification.
- Lessons should be shared in appropriate governance forums for visibility of impact and where needed, and to help prioritize actions.

Tip / Best Practice #11



Before finishing the AAR meeting ask attendees who/which part of organization that should know about the lessons learned and by when (date). A helpful mindset: *Never let a teammate fail!*

Tip / Best Practice #12



When capturing, communicating, and embedding the lesson, be sure to preserve and convey the "why" where appropriate, e.g., *why* it is important to do steps in a certain order. This will help the organization understand the underlying importance of the lesson and impacted work.

7) Track progress & impact

Track progress & impact ☐ Micro AAR ☑ Standard AAR ☑ Extended AAR

Organizations should track progress and impact of AAR-derived actions to ensure that lessons are not only captured but are implemented and effective.

Appendix 2: AAR Metrics provides several illustrative AAR metrics and KPIs that may be considered, with primary emphasis on Standard and Extended AARs. Selected metrics (e.g., training, engagement, or success stories) may also support effective use of Micro AARs. AAR metrics are grouped in two primary categories – activity metrics, or *leading metrics*, which monitor the effectiveness of capturing lessons and taking action; and outcome metrics, or *lagging metrics*, which report on learning and continuous improvement outcomes.

Tip / Best Practice #13



Include AAR in the company Management Review agenda to track action item completion, discuss major lessons learned, and assess the effectiveness of the overall AAR process.

8) Celebrate, scale & improve

Celebrate, scale & improve ☑ Micro AAR ☑ Standard AAR ☑ Extended AAR

AARs can serve as a core enabler of continual improvement and organizational learning, reinforcing a culture of reflection, transparency, and growth. Ideally an AAR program

should be tied to the organizational values and culture (i.e., "ways of working" or similar) and strategic objectives, which provides further support for its daily application.

It is important to celebrate success as a means of positive reinforcement of desired behaviors, to strengthen employee engagement, and to help the process scale across the organization. Such recognition can be tied to existing organizational processes, and may also include:

- "Best lesson of the month" highlighted in site communications.
- Recognition for teams that share a reusable lesson adopted by another area/site.
- Success stories describing impact and value
- Recognizing those who seek and adopt lessons proactively
- Recognition by leaders during tier meetings for good behaviors (speaking up, surfacing risks early).
- Annual awards for "Best repeatable practice" and "Best cross-site learning"

One approach to consider for scaling AAR is a top down and bottoms up deployment: Train on Micro-AAR broadly as part of onboarding so employees are equipped with the awareness, expectation, and tools to conduct an AAR. Concurrently, prioritize key processes (e.g. market actions, significant investigations, tech transfers, product launches, etc.) as targets to embed AAR at appropriate points in each process.

As with any other process, organization should periodically assess the effectiveness of AAR implementation (do an AAR on AAR) and drive targeted improvements to maximize impact and sustainability.

4. Roles & Responsibilities

Appendix 3: AAR Roles and Responsibilities outlines a starting point for key responsibilities of the various roles associated with AAR, including typical actions and desired outcomes, considering the following roles.

- All employees
- Line managers / supervisors
- AAR facilitator
- Quality / PQS Process Owners
- Site / Functional Leadership
- Global Knowledge Management

See appendix for additional details.

5. Training & Communications

Training

Training should be right sized to organizational needs and continuous improvement goals. Here is a simple training framework to consider:

- **AAR Awareness:** Micro-learning for all employees (15 minutes)
  - What AARs are, how to conduct a Micro AAR, and how to participate in AARs
  - Include as part of on-boarding, and potentially an annual refresher
- **AAR Facilitation:** For select employees to facilitate more complex and/or important AARs (60-90 minutes)
  - How to plan, conduct, and facilitate structured AARs
  - How to engage employees and maintain psychological safety
  - How to define clear, actionable, and reusable lessons

Tip / Best Practice #14



This facilitation role provides a unique development opportunity for employees in the company.

- **AAR for Managers:** For people leaders (60-90 minutes)
  - How to sponsor AARs and reinforce learning behaviors
  - How to recognize employees and celebrate success
  - How to encourage proactive lesson seeking and sharing
  - Patterns to monitor: in the case of "heroics" that are typically rewarded – ask "why were heroics needed in the first place? Could we have known this in advance?"

Communications

Thoughtful and repeated communications are a critical element of change management efforts to embed AARs into ways of working. Following are elements to consider

- Develop a simple communication plan that includes a launch message from site / functional / global leaders and monthly learning highlights.
- Develop "quick reference guides" or pocket cards for employees.
- Seek out and document AAR success stories in a consistent manner. Highlight examples where AAR learnings led to measurable improvements (e.g., quality, reliability, speed, cost, risk reduction) and the employees who are demonstrating effective capture and reuse of lessons; Link these stories to the organization's cultural values and strategic objectives.
- Ensure lessons are visible and broadly shared with clear guidance on where employees can locate and apply relevant insights.

6. Tips & Common Challenges: Advice from the Front Lines

Following is advice from AAR practitioners learned through experience:

- **Prioritize** lessons identified with most differential impact (i.e., 'the critical few').
- **Focus on the good also, not just on what went wrong**; organizations tend to be reactive and only trigger AAR when something goes wrong.
- **Accountability at individual level is key**, and these are high risk areas to consider:
  - For conducting AARs
  - For sharing lessons
  - For implementing lessons
  - For seeking and applying prior lessons
- **Recognize individuals** who have been major contributors to the AAR.
- Question 1**, *What was supposed to happen?*, can be a challenging question** but this is valuable data, and an opportunity to better align the organization on goals of a given activity and build situational awareness.
- **High-value lessons should be evaluated for applicability across programs** and potentially embedded into global standards/training curricula/playbooks, or decision frameworks.
- **Use trends** from AARs to inform broader continuous improvement and risk management efforts.
- **Use AAR** as a knowledge management (KM) tool **to super-charge the ability of an organization to broadly share, seek, and apply lessons.**
- **Consider a "Before Action Review,"** or a "Pre-job brief" as commonly used by safety professionals, as a means to anticipate work, what to focus on getting right, and what could go wrong. Bookending a complex activity with a BAR to start (which helps define AAR Question #1) and an AAR to reflect is a proactive and very powerful technique to crate situational awareness, anticipate challenges, and deliver improved right-first-time outcomes.
- **Have one individual be in charge of ensuring completion of AAR actions.**
- **Be mindful of the value of the AAR process**: use the Management Review to assess the effectiveness of the AAR process, modify as relevant.

7. Conclusion

After Action Reviews (AARs, or more generically, *lessons learned*) are structured and scalable learning conversations that help organizations improve quality, reliability, and execution by converting experience and insights into reusable knowledge and tangible actions. In GMP and GDP environments, AARs can help facilitate a culture of learning and continuous improvement and complement investigations, CAPA, and risk management, by focusing on how work is planned and executed and how decisions are made so teams can repeat successes and avoid repeat issues.

Data gathered by the QBL Alumni indicate that while companies make the effort to gather data and discuss the lessons learned, many stop short of systematically implementing and embedding those insights. As a result, lessons remain localized and are not translated into sustained improvements, representing a significant missed opportunity to enhance process performance, reduce re-learning, strengthen engagement, and improve business outcomes.

This Practical Guide to Quality Business Leadership developed in partnership between QBL Alumni and the RKI Institute provides an end-to-end AAR process that provides a simple yet powerful means to ensure closed-loop learning and continuous improvement. It can be used to build individual and organizational capability and demonstrably live the values of a learning organization.

When effectively implemented it will facilitate quality, compliance and financial improvement for companies and help reduce re-learning of already learned knowledge.

Appendix 1: AAR Ground Rules

The following are a starter set of ground rules that can be tailored to organizational needs, in particular for complex or sensitive AARs.

AAR Ground Rules

1. **Stay focused** on AAR scope and objectives
2. Base discussion on **facts**
3. **Do not judge** others; focus on the process, not people or personalities
4. **Listen as an ally** and **work for the common good** of the organization and employees
5. **Assume positive intent** of others (i.e., what happened likely happened for a good reason)
6. **Avoid subjectivity** and **be aware of bias**
7. **Focus on learning and improving**, not blame
8. Be **honest and candid**
9. **Respect** all perspectives
10. **Encourage** all to participate
11. Look for **disconfirming information**
12. **Celebrate success!**

Reminder:
AAR is not an indictment of the past!

Appendix 2: AAR Metrics

AAR metrics can monitor the effectiveness of capturing lessons and actions (*leading metrics*), and metrics which report on learning and continuous improvement outcomes (*lagging metrics*).

	AAR METRIC	WHAT IT TRACKS	WHY IT MATTERS
Leading Metrics	**AAR training completion rate**	% of Employees trained in AAR fundamentals	Ensures consistent understanding of AAR purpose, expectations, and execution
	Processes with AAR embedded	% of core work processes with AAR embedded at defined points compared to target	Ensures AAR is embedded into the standard work process, rather than conducted ad-hoc
	AAR session completion rate	% of AAR sessions conducted vs. planned/anticipated	Confirms AARs being routinely conducted (e.g., standing tier agenda item)
	AAR meeting timeliness	% AARs conducted on time	Ensure timeliness of the AAR session
	Number of lessons identified	Volume and Rate of lesson identification across AARs	Enables tracking overall lesson identification rate, trends by area, and trends over time
	Lesson Implementation Rate	% of actions from AARs implemented within target timelines	Ensures commitment and accountability on lesson follow up
	Knowledge Sharing Rate	% of AARs captured in the central repository and shared across functions/sites	Enables visibility, Integration with Knowledge Management (KM) and making lessons visible
	Participation rate	% of participating functions compared to target	Ensure cross functional input to the AAR meeting
	Engagement and Psychological Safety Index	Qualitative or survey-based measure of openness, candor, and perceived safety in AAR sessions	Indicates cultural maturity of the learning environment
Lagging Metrics	**Repeat lessons / repeat incidents**	Where lessons have not been captured or have not been effective in repeating repeat issues	A form of effectiveness check (akin to monitoring for repeat deviations) to improve lesson capture, implementation, and effectiveness
	Action Effectiveness Rate	% of AAR-derived actions verified as effective (no recurrence of root cause, measurable improvement)	Demonstrates that actions translate into sustained improvements and reduced recurrence
	Success stories	Tangible impact via storytelling – to both business and culture	Reinforces value of AARs and promotes reuse of successful practices
	Recognition	Employee engagement and change management	Reinforces positive behavior and model across the organization

Appendix 3: AAR Roles and Responsibilities

The following are roles central to a successful AAR capability, with corresponding responsibilities and actions.

ROLE	KEY RESPONSIBILITIES	WHAT "GOOD" LOOKS LIKE	TYPICAL ACTIONS
All Employees	• Participate openly in AAR discussions • Focus on facts, observations, and system factors • Propose improvements and actionable insights • Share successes as well as issues	• Honest reflection without blame • Speak to conditions / constraints and decision logic	• Inputs to AAR template • Action ownership where relevant
Line Managers / Supervisors	• Establish and maintain psychological safety • Ensure AARs are conducted at appropriate times • Protect time for participation • Remove barriers to execution • Ensure follow-through on actions	• Treats AARs as standard work • Reinforces learning behaviors – expects lessons to be learned • Actively support implementation of lessons	• Schedule and prioritize AAR • Monitor and Drive action tracker • Provide Coaching & feedback
AAR Facilitator	• Lead the AAR meeting • Encourage candor and prevent blame; seek potential dissenting views • Maintain focus on facts and system-level insights (not individuals) • Document AAR sufficiently & succinctly	• Balanced and inclusive participation • Clear structured outputs • All perspectives are heard	• Completed AAR record • Parked items list • Summarize key lessons and actions
Quality / PQS Process Owners	• Provide PQS triage guidance • Ensure quality-relevant lessons are routed appropriately • Monitor trend and recurring themes	• Timely, risk-based routing to appropriate PQS processes • Clear linkage between AAR outputs and quality system elements • Ensures no quality risk is ignored	• Linkage to PQS elements (e.g., CAPA / change / SOP) • Monitor cross-AAR trends and escalate systemic risks
Site / Functional Leadership	• Set expectation that AARs are routine/part of standard work • Provide guidance on target processes for embedding AAR • Set Expectations for lesson prioritization and follow through • Provide governance, including AAR metrics review • Allocate resources to support AAR execution • Model learning behaviors and reinforce culture	• Requests AAR insights in reviews • Celebrates learning • Ensures cross- functional sharing	• Site / functional learning review minutes • Recognition moments • Facilitate inclusion of AAR insights in site/functional reviews • Review AAR metrics and key themes • Enable recognition and communication of impactful lessons
Global Knowledge Management	• Own and maintain AAR process framework • Define and maintain common standards and taxonomy • Enable cross-site and cross-functional lesson sharing • Curate reusable lessons • Provide training and capability-building support	• Reusable lessons scaled across sites • Consistent templates and measures • Effective knowledge sharing and retrieval	• Maintain Global lessons library • Issue periodic Communications (e.g., Quarterly learning report, Community of practice updates) • Support training and onboarding for AAR capability

Appendix 4: AI Opportunities for AAR

AI can enhance AAR effectiveness by reducing friction in capture, synthesis, retrieval, and tracking. The goal is to improve knowledge flow across the AAR end-to-end process. AI should not be relied on for decision making, when human reflection is needed, as a substitute for dialog at the AAR meeting, or be used as the sole basis for GMP / GDP decisions.

AI OPPORTUNITY	WHAT IT DOES	VALUE IN MANUFACTURING & DISTRIBUTION	CONTROLS / GUARDRAILS
AAR note capture + summarization	Generate a concise AAR summary (expected / actual / why / actions) for facilitator review	Reduces administrative burden; improves consistency; enables faster sharing across teams	Human reviews/edits and approval required; adhere to data retention policies; avoid default raw transcript storage unless controlled
Auto-tagging and lesson classification	Suggest standardized tags and potential PQS routing based on defined taxonomy	Improves search and reuse of lessons; accelerate triage and categorization	Human confirmation required; controlled taxonomy; maintain audit trail for changes
Cross-event pattern detection	Cluster AARs / deviations to detect recurring themes and trends	Enables Earlier systemic risk detection; supports data-driven management review	Use aggregated datasets; validate analytics before use for GMP/GDP decisions
Knowledge retrieval assistant	Retrieve relevant prior lessons during preparation or in the AAR meeting discussions	Prevents rework; accelerates troubleshooting, informed decision making and planning	Restricted to curated approved knowledge sources; apply access controls; require source citations; mitigate against hallucinations
Action tracking automation	Create tasks, reminders, and evidence prompts; flags overdue or at-risk-actions	Improves action closure rates; increases accountability and follow-through	Integrate with approved task tools; keep owner accountability. ensure auditability of actions and updates
Drafting reusable artifacts	Draft job aids, checklists, training materials based on validated lessons	Accelerates embedding of lessons into standard work and training	SME approval required; apply controlled document management processes; Maintains version control
Translation & Localization	Translate lessons while preserving technical terminology and context	Enables consistent adoption across global sites and functions	Human review required; apply controlled glossary and terminology standards

AAR Toolkit

The following toolkit is provided to support rapid deployment of an effective AAR capability. The toolkit consists of three helpful AAR templates, including:

- **AAR Record (template)**
  - Use to support standardization of the AAR process and capture AAR proceedings. Organizations may find it helpful to create such data capture tools in Excel or in an online platform to prompt input, ensure consistent knowledge capture, and ensure searchability of lessons in the future but remember – it's not about the tool – so don't lead with the tool. It's about the process and how the lessons are captured and actively learned.

- **AAR Tracking – Follow Up Through to Effectiveness Check (template)**
  - Use to support tracking and follow up of AAR outputs – or lessons – to the appropriate learning and other relevant actions to maximize the learning value to the organization. Use of this tool (or similar) is critical to ensure lessons are actually learned by identifying accountability for acting on lessons and for assessing effectiveness of actions taken.

- **Management Review AAR Assessment (template)**
  - Use as a leadership communications asset to capture the profile of lessons, underlying themes, progress, and continuous improvement opportunities of the AAR process and engage with governance in meaningful dialogue to improve the business and how it operates.

Ready-to-use templates are available for download at qbaleaders.com.

AAR Toolkit: AAR Record (template)

After Action Review

MEETING INFORMATION			
Date/Time	MM/DD/YYYY		
Meeting:	AAR-###	**AAR Type:**	☐ Micro ☐ Standard ☐ Extended

ATTENDEES		
Name	Function	Core / Optional

STANDARD WORKING AGENDA	TIME (MIN)
Objective of the After-Action Review (AAR)	5 min
Background / Context for this AAR	5 min
AAR Reflection	40 min
Lessons & Action planning	10 min

MEETING NOTES

1) Objective of the After-Action Review (AAR) –
Review & clarify desired outcomes, ground rules, roles, AAR process - use reference materials as appropriate
[enter text]

2) Background / Context for this AAR
[enter text including concise, fact-based description]

3) AAR Reflection – The 5 Questions

Question 1: *What was supposed to happen?*	[enter text]
Question 2: *What actually happened?*	[enter text]
Question 3: *Was there a difference, and why? What worked well / not well?*	[enter text]
Question 4: *What did we learn / what we recommend?*	[enter text]
Question 5: *Who needs to know and how this will be communicated*	[enter text]

4) Meeting Summary, Lesson & Action Item Review:
[enter text, including what lessons are recommended for prioritization, and capture any decisions]

LESSONS and ACTION ITEMS

#	Lesson	Impact / Value	PQS Impact?	Priority (H/M/L)	Action	Owner	Due date

AAR Toolkit: AAR Tracking – Follow Up Through to Effectiveness Check (template)

AAR LESSONS, ACTION ITEMS, and EFFECTIVENESS											
AAR mtg #	#	Lesson	Impact / Value?	PQS Impact?	Priority (H/M/L)	Action	Owner	Due date	Completed date	Effectiveness check	Effective (Y/N)

AAR Toolkit: Management Review AAR Assessment (template)

Management Review
AAR Assessment & Key Learnings

Period covered		Organization	

AAR meeting #	Std (S) or Ext (E) AAR?	Lessons learned	Complete? (Y/N)	Effective? (Y/N)	Additional key learnings

Key themes

Theme #	Theme	Action(s)	Owner	Deadline

Overall achievements (savings in time, cost, other)

# / title	Detailed Description

Assessment of the AAR process

# / category	Actions

Overall conclusion

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