HEALTHCARE ENVIRONMENTAL SERVICES AUTOMATION SOICETY

HESAS

Draft

08th Jan 2020

Quality Coordination Management

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Message from the chairman

It is vividly evident that the world witnessed the worst public health and economic crisis due to COVID-19 pandemic. This inevitably mobilized the international community to act seriously and swiftly. However, the mortalities and morbidities induced by healthcare-acquired infections (HAI) are equally fatal, but the international community did not act similarly. Consequently, we are continuously and chronically suffering from HAI.

The current intervention for HAI is merely based on passively-set standards and enforcing these standards via regulatory agencies such as the centre for disease control and prevention (CDC), joint commission international (JCI), ministries of health, and other regulatory agencies. To efficiently address HAI, we inevitably need to mobilize the international community because HAI traverses a multitude of epistemological dimensions, requiring multidisciplinary tacit knowledge, and mandates active international collaboration. Besides, we believe that we can efficiently traverse deeply into the root-causes and solution landscapes by automating the entire healthcare environmental services and infection control within healthcare institutions using the latest advancements in computational epistemology, computational infection control models, computational epidemiological models, artificial intelligence, machine learning, distributed ledger technology, collective intelligence, cognitive technologies, internet of things, ubiquitous technologies, intelligent micro-measurement frameworks, artificial life, evidence-based program implementation, patient-centric care, strategy anchored execution, and symbiotic healthcare ecosystem services. Consequently, we developed these open standards that were tailored from diverse international standards to promote the automation of healthcare environmental services and infection control processes and best practices.

The Healthcare Environmental Services Operational Map (HESOM) and other standards were developed to efficiently leverage multidisciplinary experts and practitioners to contribute towards the eradication of HAI-induced mortalities and morbidities. Using ReXcels research and innovation environment, we cultivate collective intelligence by bringing together these multidisciplinary experts to iteratively develop these standards and adaptively support the innovation of computational technology that automates the execution and enforcement of these standards. As such, we cordially invite you to use these documents and participate actively in the further development of these standards to significantly reduce HAI-induced mortalities, morbidities, and their enormous negative economic externalities.

Hamid Adem
Interim Chairman, and Chief R&D Officer

Change Control

Version:	Date:	Changes:

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1

Quality Coordination Management

Purpose

1 Purpose

1. PURPOSE

The purpose of this document is to establish Quality Coordination Management process that would:

- Enable efficiently quality coordination activities
- Remove any of mis-coordination that can affect the overall performance of the process.
- Manage quality dependencies among tasks and agents in order to reduce time and costs and improve the outcome.
- Smoothen the communication between all the parties involves involved in quality coordination.

This process is based on international well acclaimed standards like:

- NHS- National Health Services Standard
- OSHA- Occupational Safety and Health Administration standard
- CDC- Centers for Disease Control and Prevention standard
- Lean six sigma- Quality Standard
- JCI- Journal of Clinical Investigation standard
- JCAHO- Joint Commission on Accreditation of Healthcare Organizations (JCAHO)
- EPA- US Environmental Protection Agency
- HCAHPS - Hospital Consumer Assessment of Healthcare Providers and Systems
- HIPA- Health Information Privacy Act standard.

*P.S: This process is a derivation from **ESM (Environmental Service Map),** which is a holistic and a comprehensive model for Environmental Services Management.*

2

Quality Coordination Management

Structure of the Document

2 Structure of the Document

2. STRUCTURE OF THE DOCUMENT

The Quality Coordination Management process document comprises the following chapters:

Chapter–3: *Scope*: This chapter describes the scope of the document and the Quality Coordination Management process.

Chapter–4: *General Assumptions*: This chapter describes the underlined assumptions made for both the document and Quality Coordination Management process.

Chapter–5: *Quality Coordination Management Framework***:** This chapter exhibits the interaction of Quality Coordination Management process with other related processes and also describes the high level process sequence for Quality Coordination Management based on EMS framework.

Chapter–6: *Quality Coordination Management Process***:** In this chapter Quality Coordination Management process and sub processes (if any) will be depicted and specified using rigorous BPMN and process specification templates.

Chapter–7: *References***:** This chapter serves as a prime reference to Quality Coordination Management process and presents the details supporting it in tabular formats. The chapter describes relevant Business Rules, Risks, Quality Attributes, Data Quality Dimensions, Operation Policies, KPIs, CTQs, Abstract Time-scales and SLAs terms specific to Quality Coordination Management process.

The Quality Coordination Management process is supposed to be a living document and consists of various variable values which would frequently evolve or change as Quality Coordination Management process matures or changes.

3

Quality Coordination Management

Scope

3 Scope

3. SCOPE

The scope of this process is applicable to all the processes and activities involved in quality management.

4

Quality Coordination Management

General Assumptions

4 General Assumptions

4. GENERAL ASSUMPTIONS

The following are the general assumptions made:

- Inputs to the process are accurate.
- This process is supported by automated tools that would enable detailed analysis and management capabilities for this process.
- The roles defined in this document can be attached to the existing position
- Any process or sub process related assumptions are explicitly identified in related Process Specification table in Chapter 6.

5

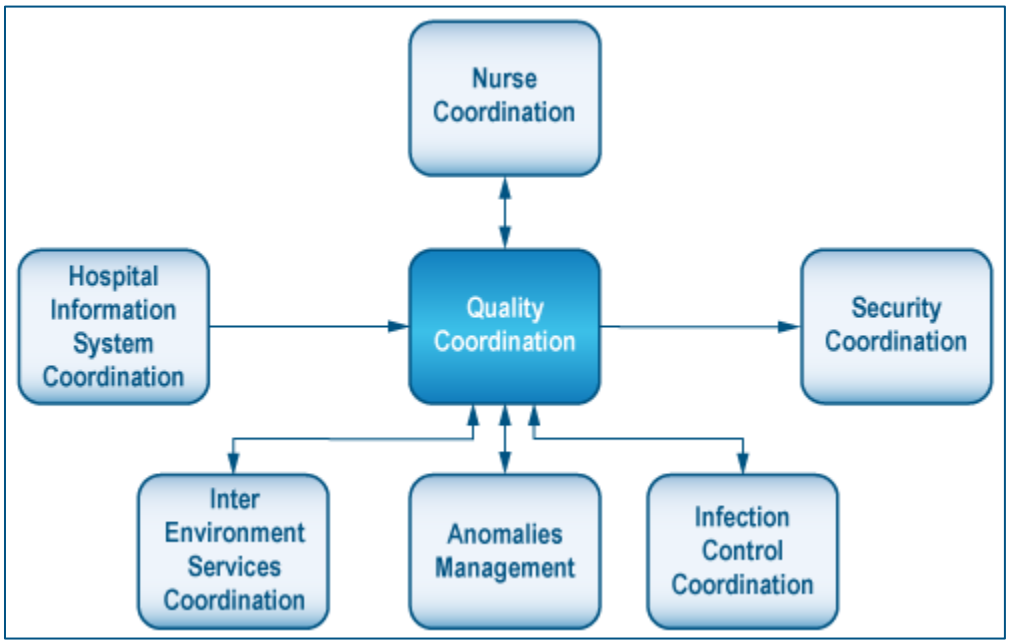
Quality Coordination Management

Quality Coordination Management Framework

5 Quality Coordination Management Framework

5.1 Quality Coordination Management Interactions

The following depiction shows the points of interaction Quality Coordination Management process with other related EMS processes. The arrows moving into Quality Coordination Management process signify the inputs from the other process to Quality Coordination Management process, and the arrows moving out of the Quality Coordination Management process signify the inputs from Quality Coordination Management process to other related EMS processes. All these processes depicted below are defined in their own respective dedicated documents.



5 Quality Coordination Management Framework

5.2 Quality Coordination Management Process Sequence

The Quality Coordination Management process comprises of following high level sequence of activities:

1. **Establishing Quality Coordination Team**
2. **Identification of Quality Coordination Processes**
3. **Identifying Quality Coordination relationships**
4. **Identification of Quality Coordination Needs**
5. **Apply 7+3 Optimization Model**
6. **Reduce variation**
7. **Establish Continuous improvement practice**
8. **Optimization of coordination.**
9. **Monitor Performance.**

Section 5.2.1-5.2.7 describes the high level process sequence for environmental services department Quality Coordination Management based on EMS framework. **Section 6.1** Process Model sheds more light on the flow of Quality Coordination Management process.

5.2.1 Establishing Quality Coordination Team

This involves establishing a governing body to look over Quality Coordination for the environmental services. This body would comprise of members taken across the organization. This process comprises of establishing following:

- Roles and responsibilities
- Chain of Authority
- Quality Coordination Methodology
- Coordination rules & workflow.

5.2.2 Identification of Quality Coordination Processes

This comprise of establishment of:

- **Core processes.** This involves establishing core quality Coordination process.
- **All supporting processes**. This involves establishing those processes which support the quality coordination process.

5 Quality Coordination Management Framework

5.2.3 Identifying Quality Coordination Relationships

This comprises of following:

- **Identification of activities.** Decomposition of the entire quality process into activities.
- **Identification of critical activities**. These are the actual activities which are implemented in order to implement quality process.
- **Identification of dependencies.** This comprises of identification of all the possible dependencies which the critical processes need for their smooth functioning activities.
- **Identification of coordinating resources.** This comprises of
    - **Identification of actors.** This comprises identification of actors who are responsible for coordinating task.
    - **Identification of resources.** This comprises identification of resources which are responsible for coordinating task.
- **Identification Coordination constraints.** The constraints to current coordination process which might result into under coordination.

5.2.4 Identify Quality Coordination needs

This involves identification of following coordination type's needs:

- **Internal**. Internal Coordination refers to the coordination among the member of the same department or section
- **External**. External Coordination refers to the coordination with out of the organizations e.g., customer, partners, suppliers.
- **Vertical**. This refers to a situation where the department head is called upon to coordinate the activities of all those who report to him.
- **Horizontal**. Horizontal Coordination exists between different departments such as Marketing and finance etc
- **Sequential Coordination**. This type of coordination often involves the transfer of responsibility for care e.g from one shift nurse to another, or from a doctor to a nurse.
- **Parallel Coordination**. This is where each profession or service retains responsibility for their care to the patient while working with others who are also seeing the patient

5.2.5 Apply 7+3 Optimization Model

This step involves removal of wastes in quality coordination process. Wastes can lead to coordination variation which can lead to quality degradation. Following are the various wastes categories which can be optimized to make the quality process more agile.

- **Inventory**. Unneeded stocks and supplies lead to most costs in terms of space occupation. The best method to deal with this is to enforce JIT inventory (Just in time inventory).
- **Motion**. This refers to unorganized movement (spaghetti motion) of staff and information can lead to budget over runs.
- **Over production**. This refers to unnecessarily over working or over doing of things which results into over budgeting. For example over doing the quality control beyond the baseline would result into over budgeting.
- **Over processing**. This refers to the tendency of over complicating things that what is required e.g., filling out extra paperwork by patient.
- **Transportation**. Unnecessary movement of patient or equipment (round traffic) would be result into fatigue for the employees and also waste their precious time.
- **Rework/ Correction**. Paperwork, coordination errors would result into reworking time which would affect the overall variation (sigma) and deter the quality.
- **Idle time**. This refers to the time spend in waiting for critical resource for the process, without which the process can't proceed.
- **Knowledge**. This refers to knowledge being wasted when fully trained employees leave the organization. Studies show that a certified nurse can cause a monetary loss of 80K dollar to the hospital. Knowledge wastage can be avoided by establishing closed loop knowledge management process.
- Please refer to EMS knowledge management process for more details.
- **Materials**. This refers to management of materials in a prescribed manner so that there is no loss of material. For example, for preparation of disinfectant solution right proportion of 5H should be used, anything lesser or more would be wastage.
- **Equipment**. This refers management of equipment in best possible manner, such that the wastage that can result because of the equipment is controlled. This involves not using the equipment which does not provide quality results, ensuring that the equipment is fit for use.

5.2.6 Reduce variation

Quality coordination performance management variation can affects almost every key performance measure and key dimensions of entire operations such as efficiency, effectiveness, safety, satisfaction, access and equity. This leads to customer dissatisfaction as well as inefficient processes and output:

- **Identification of variation.**
  This comprises of following:
  - Common Cause. Common-cause variation appears as random variation in all measures from healthcare processes.
  - Special Cause. Special-cause variation appears as the effect of causes outside the core processes of the work.

Management can reduce this variation by enabling the easy recognition of special-cause variation and by changing healthcare processes by DMAIC six sigma methodology. Six sigma's main objective is to minimize quality coordination performance management variation.

Following are the various activities for six sigma quality program.

- **Define.**
  - **Goal establishment.** This comprises of establishing and defining target to achieve. For example, reduction in errors resulting from coordination process management by 25%.
  - **Establish tasks.** This involves setting up of task:
    - **Implicit task.** Implicit task which can be accomplished via automation.
    - **Explicit task.** Explicit tasks which require human intervention.
- **Measure.**
  This refers to the collection of data and measuring techniques. This involves following:
  - **Identification of parameters**. This involves identification of :
    - Population. The actual target audience of the data collection.
    - Sampling. The sample representation of the population.
    - Hypothesis. Test to ensure that the sample selected is actual representation of the population.
    - Sample size. The optimal sample size to establish purposeful results
  - **Data collection.** This comprises of following:
    - Instantaneous data collection. This refers to a conditions where by certain events can result into instantaneous data collection, for example a patient profile shows TB, would be a instantaneous data source rather than identification of microbes in the environmental conditions

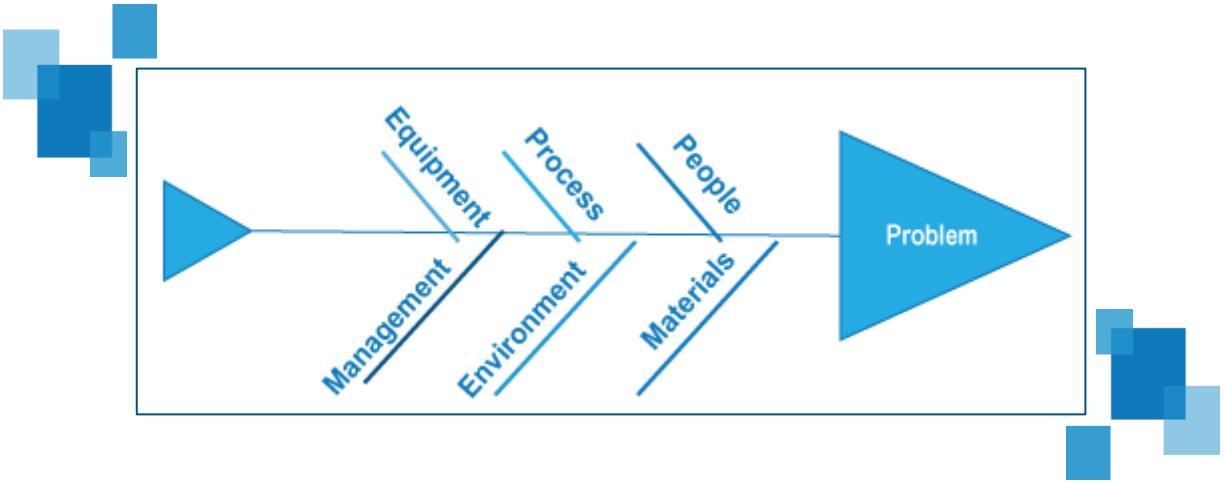
- Implicit plan. This refers to the computer generated automated plan.
- Explicit plan. This refers to the scenario whereby data collection is done for certain situations such as infection outbreaks and requires human intervention.

- **Sampling techniques.** This comprise of following:
  - **Simple random sampling**
    In a simple random sample ('SRS') of a given size, all such subsets of the frame are given an equal probability. Each element of the frame thus has an equal probability of selection: the frame is not subdivided or partitioned
  - **Systematic sampling**
    Systematic sampling relies on arranging the target population according to some ordering scheme and then selecting elements at regular intervals through that ordered list.
  - **Stratified sampling**
    Where the population embraces a number of distinct categories, the frame can be organized by these categories into separate "strata." Each stratum is then sampled as an independent sub-population, out of which individual elements can be randomly selected
  - **Line-intercept sampling**
    Line-intercept sampling is a method of sampling elements in a region whereby an element is sampled if a chosen line segment, called a "transect", intersects the element

- **Analyze Phase**
  In the Analyze phase, information gathered in the Measure phase, is analyzed to pinpoints the root cause of variation, and identify improvement opportunities where non-value-add tasks can be removed. Following are various methods to do so:
  - **Ishikawa Diagram.** This method can be useful in helping identify where something may be going wrong, or be improved. Such a diagram is typically the outcome of a brainstorming session where problem solvers can offer suggestions. The main goal is represented by the trunk of the diagram, and primary factors are represented as branches. Secondary factors are then added as stems, and so on. Creating the diagram stimulates discussion and often leads to increased understanding of a complex problem.

    Causes are usually grouped into major categories to identify the sources of problem. The categories typically include:
    - **People**: Anyone involved with the process
    - **Process**: How the process is performed and the specific requirements for doing it, such as policies, procedures, rules, regulations and laws
    - **Equipment**: Any equipment, computers, tools etc. required to accomplish the job

- **Materials**: Raw materials, parts, pens, paper, etc. used to produce the final product
- **Management**: Management related issues, decisions.
- **Environment**: The conditions, such as location, time, temperature, and culture in which the process operates.



- **Pareto Analysis.** This is a technique for separating important potential causes from more trivial issues. The following steps should be taken:
  - Form a table listing the causes and their frequency as a percentage.
  - Arrange the rows in the decreasing order of importance of the causes, i.e. the most important cause first.
  - Add a cumulative percentage column to the table

  Pareto Analysis signifies 80-20 rule, meaning that by doing 20% of work, 80% of the advantage of doing the entire job can be generated. Or in terms of Problem Management, a large majority of problems (80%) are produced by a few key causes (20%).This technique helps to identify the top 20% of causes that needs to be addressed to resolve the 80% of the problems. Once the top 20% of the causes are identified, then tools like the Ishikawa diagram or Fish-bone Analysis to be used to identify the root causes of the problems.
- **Root cause Analysis tree.**
  Root cause analysis tree is a structured evaluation method that identifies the root causes for an undesired outcome and the actions adequate to prevent recurrence. Root cause tree analysis continues until organizational factors have been identified, or until data are exhausted. Root cause tree analysis

enables organization to make informed decisions and also serve as a mean to implement close loop knowledge management in the organization. The root cause analysis can be utilized by any employee irrespective of his background and skill level to rectify a problem.

- **Improve Phase.**
  The Improve phase is when findings are implemented, workflows are streamlined and variations removed.
- **Control Phase.**
  This involves implementing monitoring and sustaining procedures to facilitate over all improvisation.

5.2.7 Establish Continuous Improvement Practices

Quality improvement consists of a wide array of managerial and organizational activities designed to streamline production processes, to remove waste and unpredictability, and to achieve previously unprecedented levels of performance.

This comprises of establishing various continuous improvement practices, for following continuous improvement domain.

Continuous Improvement Domains	Improvement Areas	Continuous Improvement Practices
Management	• Leadership • Mission and shared vision • Targets • Resources • Favourable changes in organisation	• Set targets based on realistic expectations towards practice development and long term policy of the professional organisation • Make plans on improvement • Establish priorities towards subjects that particularly need improvement • Designate a staff as the quality coordinator • Hold quality meetings with all staff at regular intervals (for example, once a month) • Establish a quality board in practice • Integrate the activities in daily work
Record keeping	• Performance measures • Analysis of the organisation • Satisfaction	• Collect data on specific subjects (according to priorities set or projects run and including patient satisfaction), if possible form electronic

		medical files (other sources include insurers, laboratories, pharmacists, appraisals, etc) • Make annual / monthly/ quarterly reports on outcomes of care • Make annual reports on improvement activities
Systematic approach	• Planned activities • Use of the quality cycle • Use of specific tools and techniques • Learn from experience	• Run small improvement projects on prioritised issues (management of chronic disease, preventive activities, accessibility, workload) • Use tools and techniques that are simple to use and not time consuming (brainstorming, analysis of strengths and weaknesses, flow charts, cause and effect diagrams, etc) • Aim at changes in which existing processes are adapted or re-engineered (and build on experience) (ideas to improve processes can come from peer review, continuing medical education, guidelines, publications, etc)
Collaboration	• Everyone involved • Positive attitude towards continuous • Quality improvement • Team building • Participation	• Involve everyone in quality improvement activities (everyone is aware of tasks and responsibilities) • Build teams for systematic improvement activities • Involve patients (and other external customers) in improvement activities

5.2.8 Optimization of Coordination

This comprise of following:

- **Aligning goals.** Aligning goals so that each actor and activity has accountability and are free from conflicts.
- **Removal of interaction complexity.** This involves resolving conflicts arising from unexpected task interactions.
- **Ensuring Information sharing.** This ensures that a free information flow happens across all the activities so that the activities can operate in harmony with each other. This can be achieved via having frequent meetings.
- **Enabling Synchronization.** Some activities need to be synchronized with other activities so as to ensure that they do not impact the overall process goal.

- **Establish Behavior Harmony.** This activity ensures that all the actors/ agents involved in the coordination process trust each other, and see the entire process as one.
- **Use of Automation**. Using automated tools to facilitate coordination would ensure that the process remains accurate and free from error.
- **Ensure Mutual Exclusiveness.** This activity ensures that two coordinating activities do not share a resource at the same time.

5.2.9 Monitor performance

This process involves monitoring the performance of the entire process to identify:

- **Conflicts**. If any conflicts are identified, they are highlighted to senior management, who would draft resolution plan to optimize the Quality Coordination process
- **Improvisations**. If any improvisation needs are identified, they are highlighted to senior management, who would draft improvisation plan to optimize the Quality Coordination process
- **Anomalies**. The anomalies found in the process are escalated to the anomalies management process.

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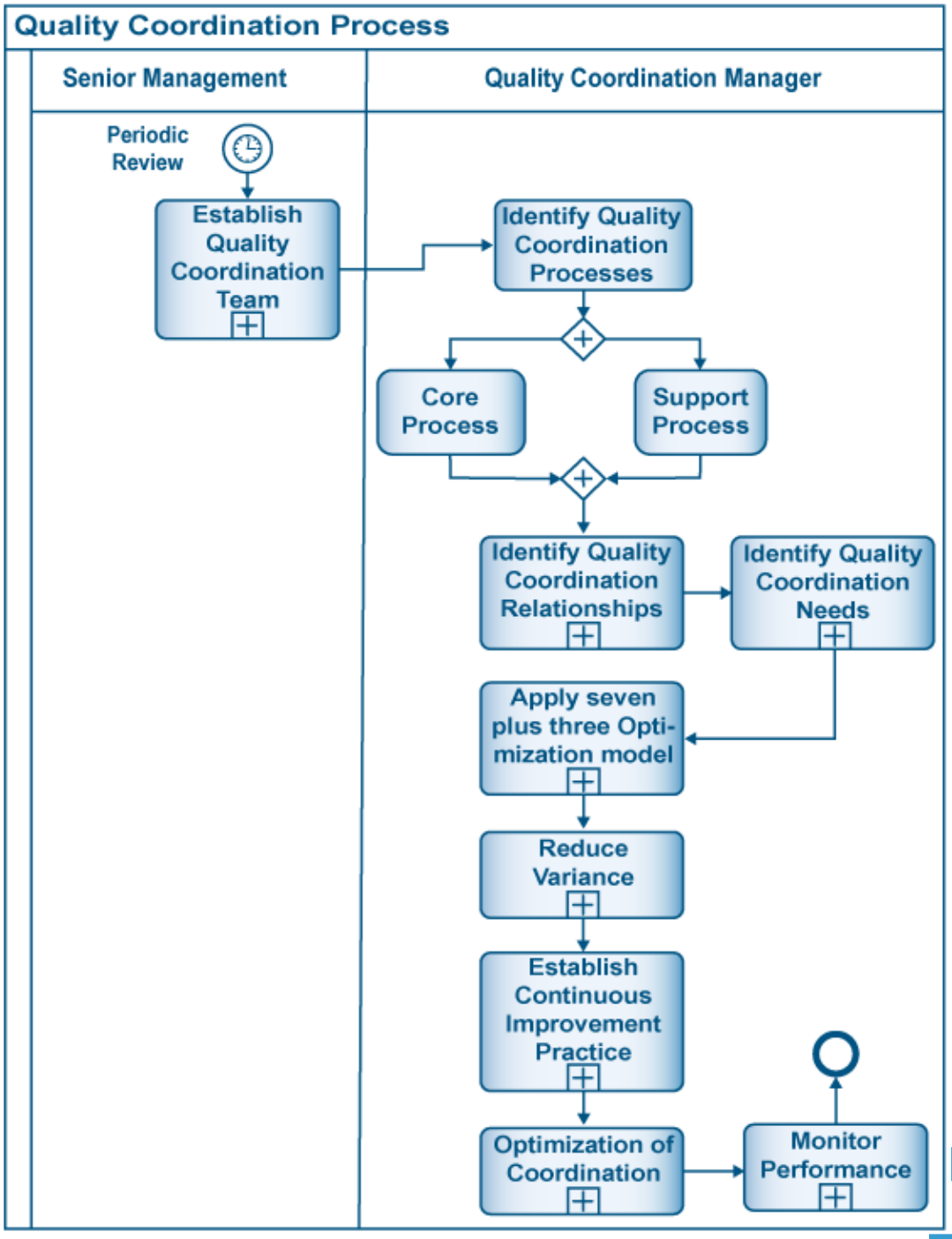
6

Quality Coordination Management

Quality Coordination Management Process

6 Quality Coordination Management Process

6.1 Process Model



6 Quality Coordination Management Process

6.2 Process Specification

Specification	Description
Summary/Purpose	The purpose of this process is to create Quality Coordination Management process for environmental services.
Scope	This is a Level 1 Process Specification.
Primary Reference	• Lean Six Sigma Standard, OSHA, NHS
Related ESM Practices	Infection control coordination, Nurse coordination, security coordination, hospital information system coordination, inter environment services coordination, Anomalies Management.
Related Business Driver	Coordination of quality related activities across organization.
Related Operational Policies	OP-001, OP-002, OP-003, OP-004, OP-005, OP-006, OP-007, OP-008 (Ref. 7.5)
Assumptions	• Inputs to the process are accurate. • Top level management commitment exists.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality Coordination.

6 Quality Coordination Management Process

<table>
<tr><td>MSD Management</td><td>Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)</td></tr>
<tr><td>EBC Procedures</td><td>None</td></tr>
<tr><td>Timing Dimensions</td><td><table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table></td></tr>
<tr><td>Trigger</td><td>• Periodic Activities.</td></tr>
<tr><td>Basic Course of Event</td><td>Quality Coordination Management
1. Senior Management establishes Quality Coordination Team
2. Quality Coordination Manager identifies quality coordination processes (core processes and supporting processes)
3. Quality Coordination Manager identifies coordination relationships
4. Quality Coordination Manager identifies quality coordination Needs
5. Quality Coordination Manager identifies 7+3 optimization Model
6. Quality coordination manager reduces variance
7. Quality coordination manager establishes continuous improvement practices
8. Quality Coordination Manager performs optimization of Quality Coordination
9. Quality Coordination Manager monitors performance.
10. End</td></tr>
<tr><td>Alternative Path</td><td>None</td></tr>
<tr><td>Exception Path</td><td>System Down
1. Keep paper track until system is up and running
2. Update the System and clear all logs.
3. End.</td></tr>
<tr><td>Extension points</td><td>Anomalies Management</td></tr>
<tr><td>Preconditions</td><td>Automated tools are provided to the process to ensure smooth and effective operations.</td></tr>
</table>

6 Quality Coordination Management Process

Post -conditions	Quality Coordination Management process is established.
Related Business Rules	BR-001, BR-002, BR-003, BR-004, BR-005, BR-006, BR-007, BR-008 (Ref 7.1)
Related Risks	RR-001, RR-002, RR-003, RR-004, RR-005 (Ref. 7.2)
Related Quality Attributes	Reliability, Availability, Accountability, Performance, Auditability, confidentiality, non-repudiation, adaptability (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Reputation, Objectivity, free of error, Relevance, completeness, timeliness, understandability, concise representation (Ref 7.4)
Related Primary SLA Terms	(Ref 7.9)
Related KPIs	CB, WMR, QCER, CNR, NCP, DR, CRR, IT, VR (Ref 7.6)
Related CTQs	CB, WMR, QCER, CNR, NCP, DR, CRR MOM, PWOM, CTQ, IOM, TOM, WRM, DRM, VRV, ITV (Ref 7.7)
Actors/Agents	Quality Coordination Manager
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance, operational legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1

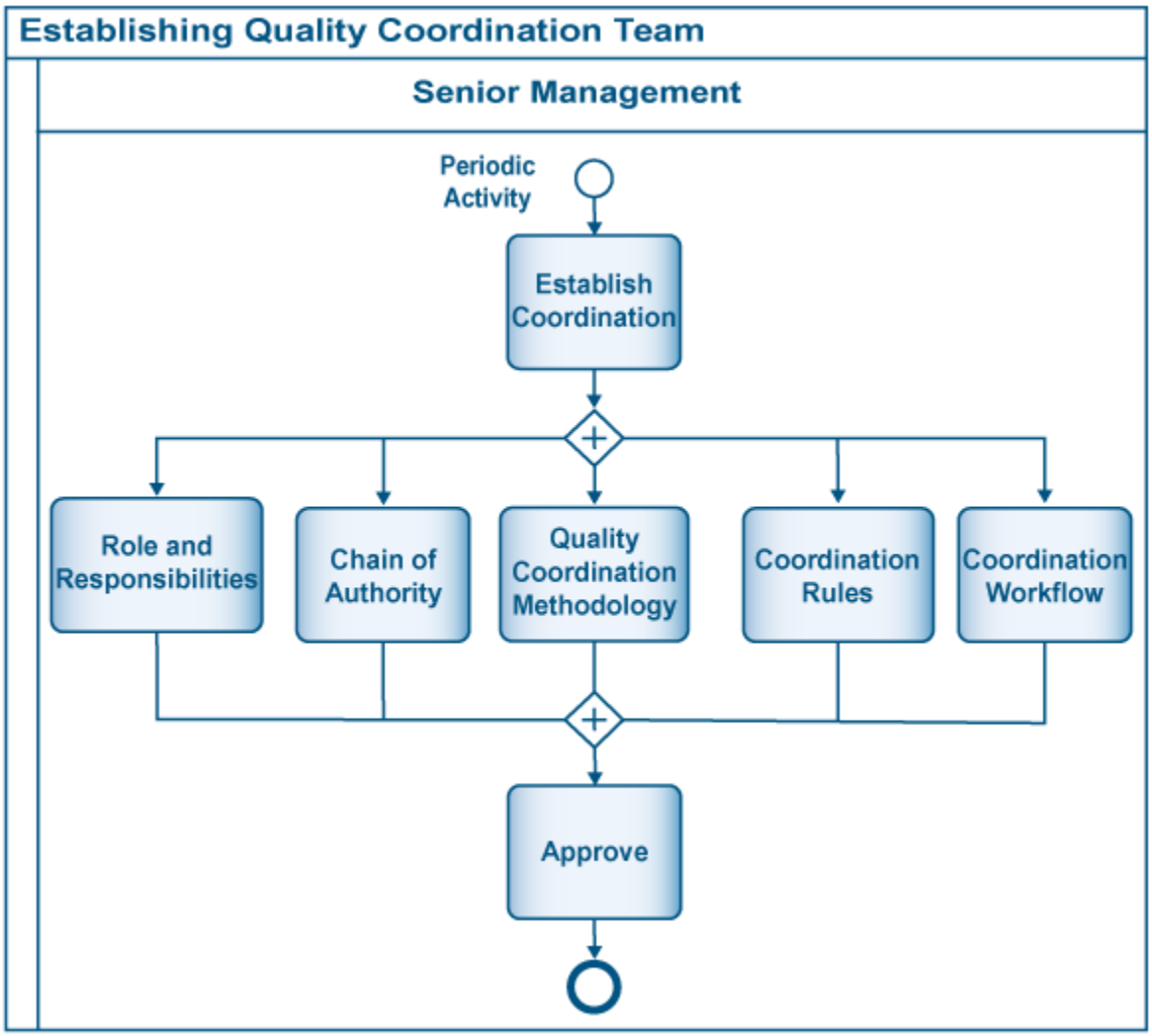
6 Quality Coordination Management Process

Process Model	Section 6.1
Other References	Appendix A: Business Process Modeling Notation Reference Appendix B: Chain of Infection

6.3 Roles and Responsibilities

Roles	Responsibilities
Quality Coordination Manager	• Quality Coordination Manager identifies quality coordination processes (core processes and supporting processes) • Quality Coordination Manager identifies coordination relationships • Quality Coordination Manager identifies quality coordination Needs • Quality Coordination Manager identifies 7+3 optimization Model • Quality coordination manager reduces variance • Quality coordination manager establishes continuous improvement practices • Quality Coordination Manager performs optimization of Quality Coordination • Quality Coordination Manager performs optimization of Quality Coordination • Quality Coordination Manager monitors performance.
Senior Management	• Senior Management establishes Quality Coordination Team

6.4 Sub Process – Establishing Quality Coordination Team



6 Quality Coordination Management Process

6.5 Sub Process – Establishing Quality Coordination Team Specification

Specification	Description
Summary/Purpose	To establish the Quality Coordination governing body
Scope	This is a Level 2 Process Specification.
Primary Reference	• Lean Six Sigma standard, NHS, OSHA
Related ESM Practices	Infection control coordination, Nurse coordination, security coordination, hospital information system coordination, inter environment services coordination, Anomalies Management.
Related Business Driver	Proper management of the process.
Related Operational Policies	OP-001 (Ref. 7.5)
Assumptions	• Inputs to the process are accurate.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality Coordination.

6 Quality Coordination Management Process

<table>
<tr><td>MSD Management</td><td>Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)</td></tr>
<tr><td>EBC Procedures</td><td>None</td></tr>
<tr><td>Timing Dimension</td><td><table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table></td></tr>
<tr><td>Trigger</td><td>• Periodic Activity</td></tr>
<tr><td>Basic Course of Event</td><td><u>Establishing Quality Coordination Team</u>
1. Senior management establishes roles and responsibilities, chain of authority, Quality coordination methodology, coordination rules and coordination workflow.
2. End</td></tr>
<tr><td>Alternative Path</td><td>None</td></tr>
<tr><td>Exception Path</td><td>System Down
1. Keep paper track until system is up and running
2. Update the System and clear all logs.
3. End.</td></tr>
<tr><td>Extension points</td><td>Identify quality coordination processes.</td></tr>
<tr><td>Preconditions</td><td>The senior management is very committed to ensure that this process is well governed.</td></tr>
<tr><td>Post -conditions</td><td>Quality Coordination Management team gets formulated.</td></tr>
<tr><td>Related Business Rules</td><td>BR-001 (Ref 7.1)</td></tr>
<tr><td>Related Risks</td><td>RR-001(Ref. 7.2)</td></tr>
<tr><td>Related Quality Attributes</td><td>Reliability, Accountability, Performance, Auditability, Extensibility (Ref 7.3)</td></tr>
</table>

6 Quality Coordination Management Process

Related Data Quality Dimensions	Accuracy, Reputation, Objectivity, free of error, Relevance, completeness, Value added, Believability (Ref 7.4)
Related Primary SLA Terms	(Ref 7.9)
Related KPIs	CB (Ref 7.6)
Related CTQs	CBV (Ref 7.7)
Actors/Agents	Senior Management
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance, operational legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.4
Other References	Appendix A: Business Process Modeling Notation Reference Appendix B: Chain of Infection

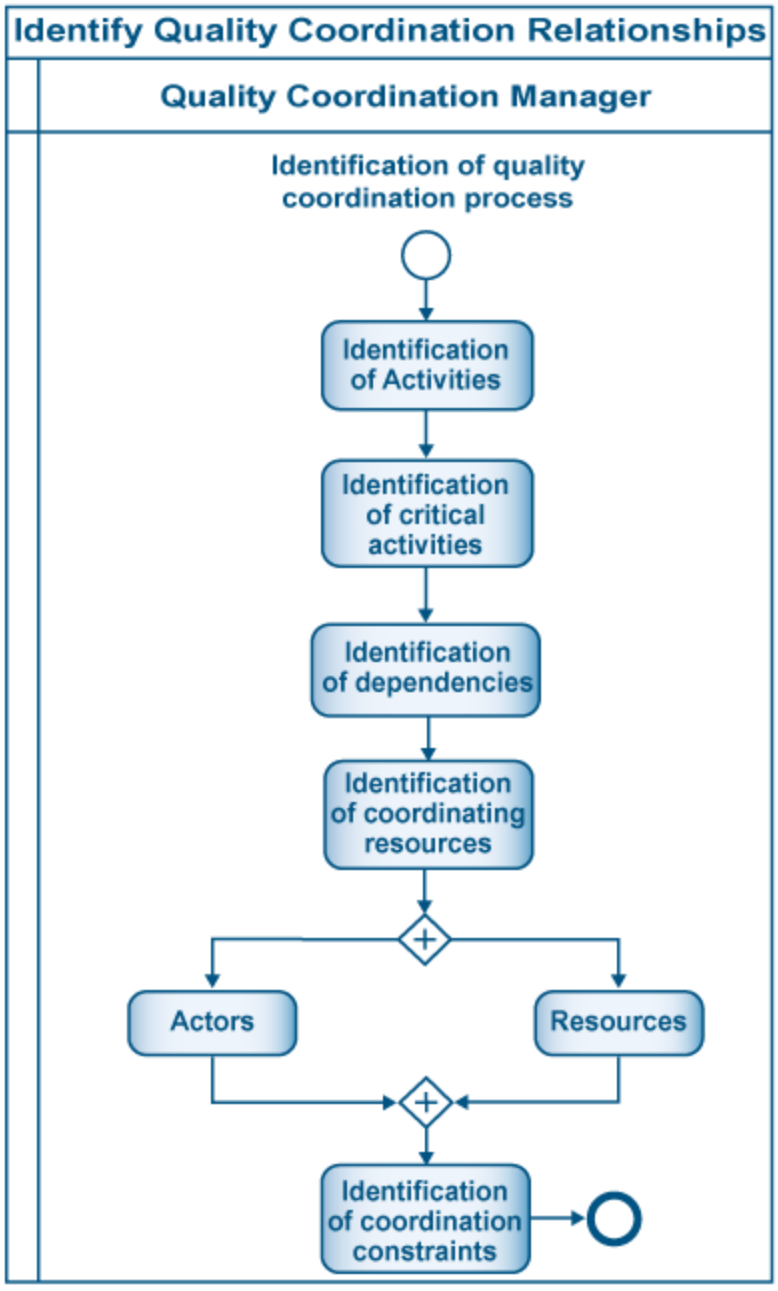
6 Quality Coordination Management Process

6.6 Sub Process – Establishing Quality Coordination Team Roles and Responsibilities

Roles	Responsibilities
Senior Management	Senior management establishes roles and responsibilities, chain of authority, Quality coordination methodology, coordination rules and coordination workflow

6 Quality Coordination Management Process

6.7 Sub Process – Identify Quality Coordination Relationships



6 Quality Coordination Management Process

6.8 Sub Process – Identify Quality Coordination Relationships Specification

Specification	Description
Summary/Purpose	To establish the process to identify Quality Coordination relationships
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six Sigma standard, NHS, OSHA
Related ESM Practices	Infection control coordination, Nurse coordination, security coordination, hospital information system coordination, inter environment services coordination, Anomalies Management.
Related Business Driver	Better understanding of the quality coordination activities.
Related Operational Policies	OP-002 (Ref. 7.5)
Assumptions	• Inputs to the process are accurate.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality Coordination.

6 Quality Coordination Management Process

<table>
<tr><td>MSD Management</td><td>Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)</td></tr>
<tr><td>EBC Procedures</td><td>None</td></tr>
<tr><td>Timing Dimension</td><td><table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table></td></tr>
<tr><td>Trigger</td><td>• Identification of Quality Coordination process</td></tr>
<tr><td>Basic Course of Event</td><td><u>Identify Infection control relationship</u>
• Quality Coordination Manager performs identification of process activities.
• Quality Coordination Manager performs identification of critical activities.
• Quality Coordination Manager performs identification of dependencies.
• Quality Coordination identifies coordinating resources (actors as well as resources)
• Quality Coordination identifies identification of coordination constraints.
• End</td></tr>
<tr><td>Alternative Path</td><td>None</td></tr>
<tr><td>Exception Path</td><td>System Down
1. Keep paper track until system is up and running
2. Update the System and clear all logs
3. End.</td></tr>
<tr><td>Extension points</td><td>Identification of quality coordination needs</td></tr>
<tr><td>Preconditions</td><td>This process is supported by automated tools.</td></tr>
<tr><td>Post -conditions</td><td>Coordination related relationships are understood</td></tr>
<tr><td>Related Business Rules</td><td>BR-002(Ref 7.1)</td></tr>
</table>

6 Quality Coordination Management Process

Related Risks	RR-002(Ref. 7.2)
Related Quality Attributes	Reliability, Accountability, Performance, Auditability, Extensibility (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Reputation, Objectivity, free of error, Relevance, completeness, Value added, Believability (Ref 7.4)
Related Primary SLA Terms	(Ref 7.9)
Related KPIs	NCP(Ref 7.6)
Related CTQs	NCPV (Ref 7.7)
Actors/Agents	Quality Coordination Manager.
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance, operational legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.7
Other References	Appendix A: Business Process Modeling Notation Reference Appendix B: Chain of Infection

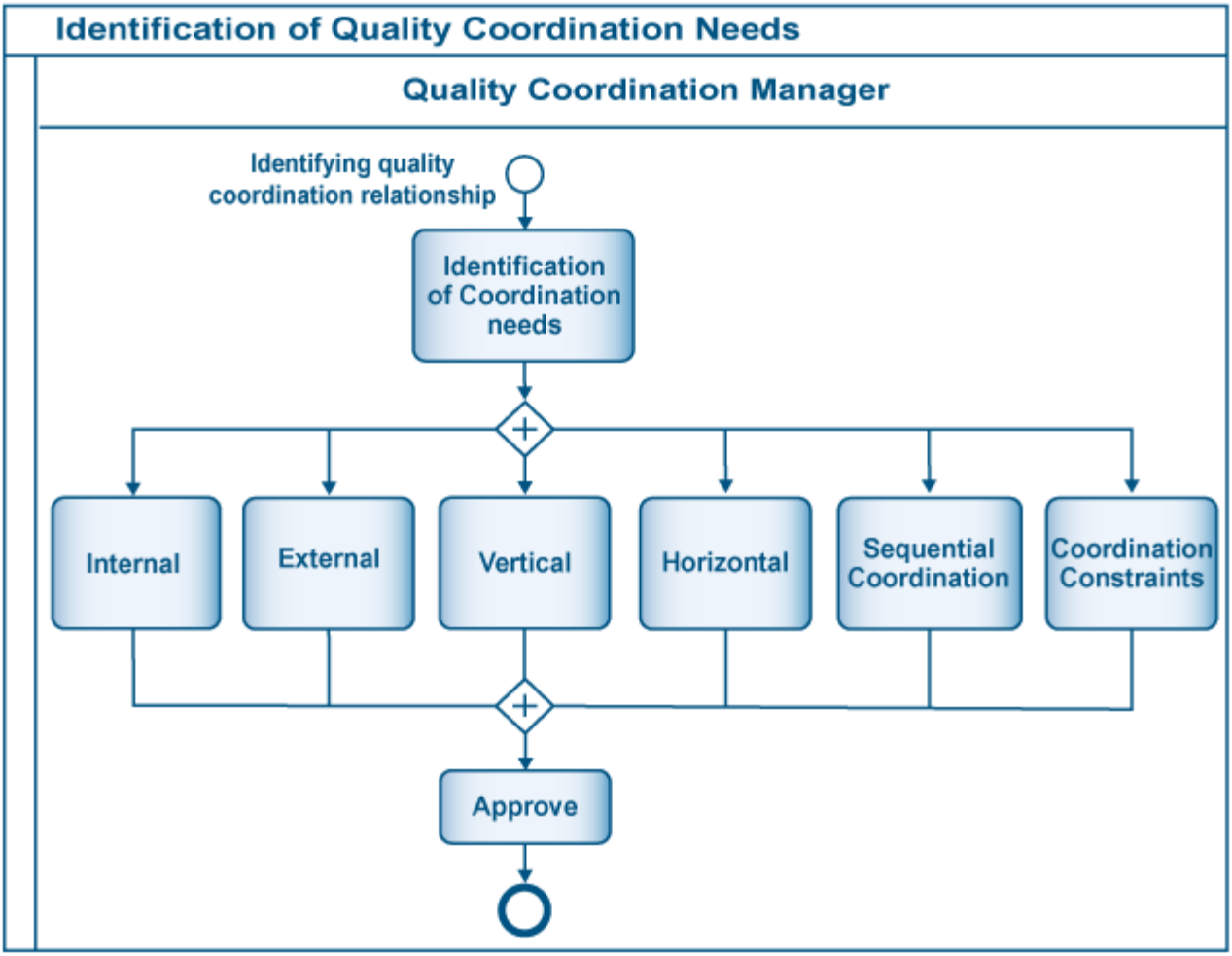
6 Quality Coordination Management Process

6.9 Sub Process – Identify Quality Coordination Relationships Roles and Responsibilities

Roles	Responsibilities
Quality Coordination Manager	• Quality Coordination Manager performs identification of process activities. • Quality Coordination Manager performs identification of critical activities. • Quality Coordination Manager performs identification of dependencies. • Quality Coordination identifies coordinating resources (actors as well as resources) • Quality Coordination identifies identification of coordination constraints.

6 Quality Coordination Management Process

6.10 Sub Process – Identify Quality Coordination Needs



6 Quality Coordination Management Process

6.11 Sub Process – Identify Quality Coordination Needs Specification

Specification	Description
Summary/Purpose	To establish the process to explain the process quality coordination needs
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six Sigma standard, NHS, OSHA
Related ESM Practices	Infection control coordination, Nurse coordination, security coordination, hospital information system coordination, inter environment services coordination, Anomalies Management.
Related Business Driver	Identification of need
Related Operational Policies	OP-005 (Ref. 7.5)
Assumptions	• Inputs to the process are accurate.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality Coordination.

6 Quality Coordination Management Process

<table>
<tr><td>MSD Management</td><td>Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)</td></tr>
<tr><td>EBC Procedures</td><td>None</td></tr>
<tr><td>Timing Dimension</td><td><table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table></td></tr>
<tr><td>Trigger</td><td>• Identification of quality coordination relationship</td></tr>
<tr><td>Basic Course of Event</td><td><u>Identification of Quality Coordination Needs</u>
1. Quality Coordination Manager performs identification of coordination needs (internal, external, vertical, horizontal, sequential coordination, coordination constraints.
2. End</td></tr>
<tr><td>Alternative Path</td><td>None</td></tr>
<tr><td>Exception Path</td><td>System Down
1. Keep paper track until system is up and running
2. Update the System and clear all logs.
3. End.</td></tr>
<tr><td>Extension points</td><td>Apply seven plus three optimization model</td></tr>
<tr><td>Preconditions</td><td>This process is supported by automated tools.</td></tr>
<tr><td>Post -conditions</td><td>Quality coordination needs are established.</td></tr>
<tr><td>Related Business Rules</td><td>BR-005(Ref 7.1)</td></tr>
<tr><td>Related Risks</td><td>RR-002(Ref. 7.2)</td></tr>
</table>

6 Quality Coordination Management Process

Related Quality Attributes	Reliability, Accountability, Performance, Auditability, Extensibility (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Reputation, Objectivity, free of error, Relevance, completeness, Value added, Believability (Ref 7.4)
Related Primary SLA Terms	(Ref 7.9)
Related KPIs	NCR (Ref 7.6)
Related CTQs	NCRV (Ref 7.7)
Actors/Agents	Quality Coordination Manager.
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance, operational legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.10
Other References	Appendix A: Business Process Modeling Notation Reference Appendix B: Chain of Infection

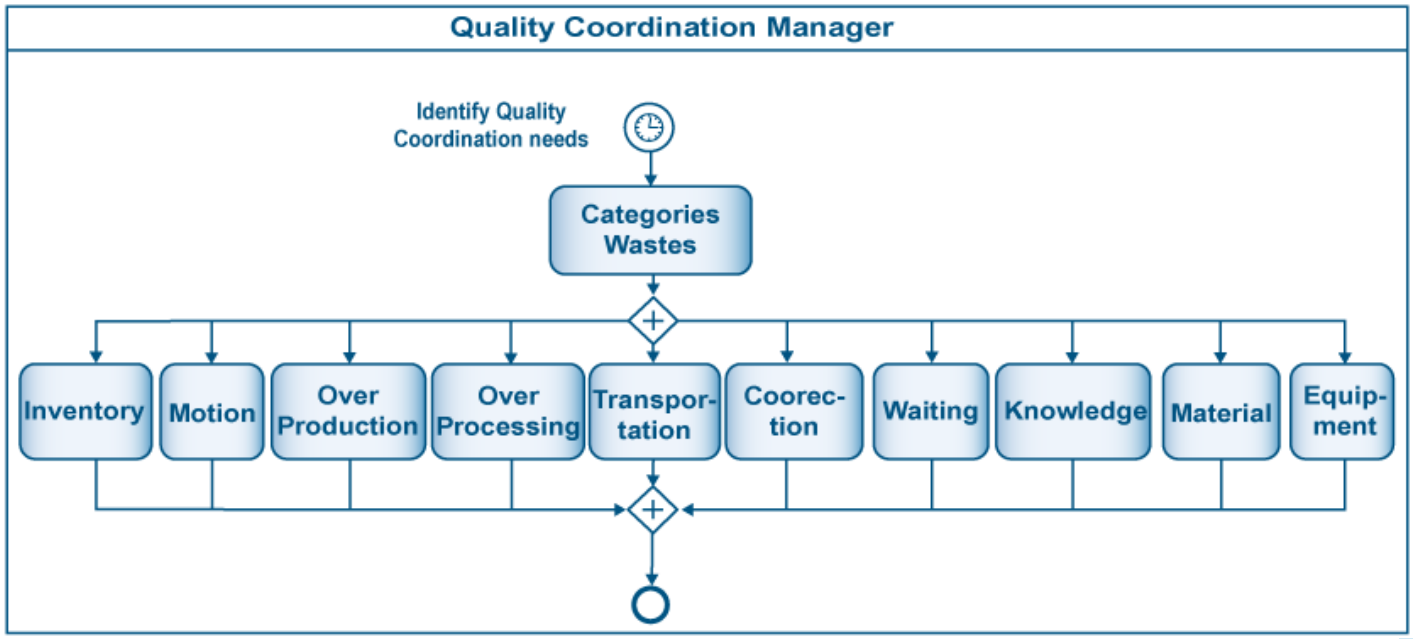
6 Quality Coordination Management Process

6.12 Sub Process – Identify Quality Coordination Needs Roles and Responsibilities

Roles	Responsibilities
Quality Coordination Manager	• Quality Coordination Manager performs identification of coordination needs (internal, external, vertical, horizontal, sequential coordination, coordination constraints

6 Quality Coordination Management Process

6.13 Sub Process – Establish 7+3 model



6 Quality Coordination Management Process

6.14 Sub Process – Establish 7+3 model Specification

Specification	Description
Summary/Purpose	The purpose of this process is to establish seven plus three model
Scope	This is a level 1 Process Specification.
Primary Reference	• Lean Six sigma
Related ESM Practices	Infection control coordination, Nurse coordination, security coordination, hospital information system coordination, inter environment services coordination, Anomalies Management.
Related Business Driver	Service quality improvisation
Related Operational Policies	OP-006 (Ref 7.5)
Assumptions	Senior Management Support exists.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality coordination

6 Quality Coordination Management Process

<table>
<tr><td>MSD Management</td><td>Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)</td></tr>
<tr><td>EBC Procedures</td><td>None</td></tr>
<tr><td>Timing Dimension</td><td><table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table></td></tr>
<tr><td>Trigger</td><td>• Identification of quality coordination needs</td></tr>
<tr><td>Basic Course of Event</td><td>Seven plus three model
1. Quality manager categorizes wastes into inventory, motion, over production, transportation, correction, idle time, knowledge, material, equipment.
2. End</td></tr>
<tr><td>Alternative Path</td><td>None</td></tr>
<tr><td>Exception Path</td><td>System Down
1. Keep paper track until system is up and running
2. Update the System and clear all logs.
3. End.</td></tr>
<tr><td>Extension points</td><td>Establish Six sigma Approach</td></tr>
<tr><td>Preconditions</td><td>There exists a capability at environmental Services department to monitor the performance of Services.</td></tr>
<tr><td>Post -conditions</td><td>Seven plus one model process gets formulated.</td></tr>
<tr><td>Related Business Rules</td><td>BR-006 (Ref 7.1)</td></tr>
<tr><td>Related Risks</td><td>RR-002 (Ref. 7.2)</td></tr>
<tr><td>Related Quality Attributes</td><td>Reliability, Usability, Data Integrity, Non-repudiation, Accountability, Performance, Auditability, Service reliability, confidentiality, authenticity, availability, non repudiation, testability</td></tr>
</table>

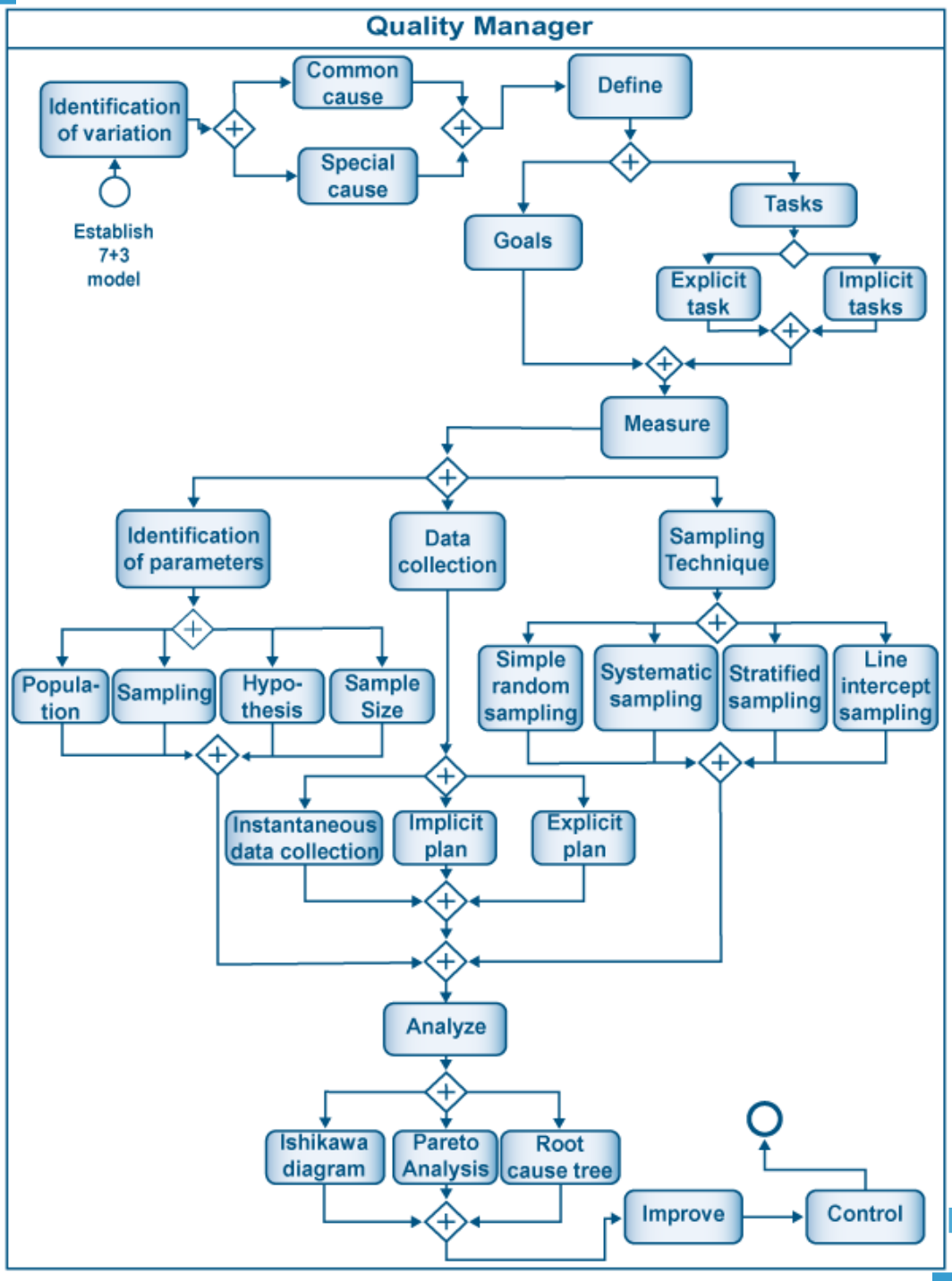
	(Ref 7.3)
Related Data Quality Dimensions	Accuracy, Objectivity, Relevance, Completeness, timeliness, Understandability, interpretability, Reputation, Objectivity, Free-0f Error, Relevance, Completeness, Timeliness, Concise Representation (Ref 7.4)
Related Primary SLA Terms	TBD (Ref 7.9)
Related KPIs	WMR (Ref 7.6)
Related CTQs	WMRV, MOM, PWOM, CTQ, IOM, TOM, WRM, DRM (Ref 7.7)
Actors/Agents	Quality Coordination Manager
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the Issue to additional Agent with same Role 2. Update the Issue 3. Log the Delegation Delegation Rule -2: Agent Overloaded 1. Delegate the Issue to additional Agent with same Role 2. Update the Issue 3. Log the Delegation
Escalation	Rule 1: Performance or operational or legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.13
Other References	Appendix A: Business Process Modeling Notation Reference Appendix B: Chain of Infection

6 Quality Coordination Management Process

6.15 Sub Process – Establish 7+3 model Roles and Responsibilities

Roles	Responsibilities
Quality Coordination Manager	Quality manager categorizes wastes into inventory, motion, over production, transportation, correction, idle time, knowledge, material, equipment.

6.16 Sub Process – Reduce Variation



6 Quality Coordination Management Process

6.17 Sub Process – Reduce Variation Specification

Specification	Description
Summary/Purpose	The purpose of this process is to reduce variation.
Scope	This is a level 1 Process Specification.
Primary Reference	• Lean waste minimization • Six sigma quality model
Related ESM Practices	Infection control coordination, Nurse coordination, security coordination, hospital information system coordination, Inter environment services coordination, Anomalies Management.
Related Business Driver	Perfection and accuracy
Related Operational Policies	OP-007 (Ref 7.5)
Assumptions	Senior Management Support exists.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for quality coordination Management

6 Quality Coordination Management Process

<table>
<tr><td>MSD Management</td><td>Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)</td></tr>
<tr><td>EBC Procedures</td><td>None</td></tr>
<tr><td>Timing Dimension</td><td><table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table></td></tr>
<tr><td>Trigger</td><td>• Establish 7+3 model</td></tr>
<tr><td>Basic Course of Event</td><td>Reduce variation
1. Quality manager identifies variation (common cause and specific cause)
2. Quality manager defines quality goals and related task (explicit as well as implicit tasks)
3. Quality Manager establishes measure phases(identification of parameters (population, sampling, hypothesis, sample size) data collection categories (instantaneous data collection, implicit plan and explicit plan) and sampling techniques (simple random sampling, systematic sampling, stratified sampling, line intercept sampling)
4. Quality Manager establishes analyzes phase (via ishikawa diagram, pareto analysis and root cause tree)
5. Quality Manager improves the overall procedures and work flow
6. Quality manager controls the process.
7. End</td></tr>
<tr><td>Alternative Path</td><td>None</td></tr>
<tr><td>Exception Path</td><td>System Down
1. Keep paper track until system is up and running
2. Update the System and clear all logs.
3. End.</td></tr>
<tr><td>Extension points</td><td>Establish continuous improvement practices.</td></tr>
</table>

6 Quality Coordination Management Process

Preconditions	There exists a capability to monitor the performance of outsourcing control.
Post -conditions	Six sigma approached based variation control process gets formulated.
Related Business Rules	BR-007 (Ref 7.1)
Related Risks	RR-004 (Ref. 7.2)
Related Quality Attributes	Reliability, Usability, Data Integrity, Non-repudiation, Accountability, Performance, Auditability, Service reliability, confidentiality, authenticity, availability, non repudiation, testability (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Objectivity, Relevance, Completeness, timeliness, Understandability, interpretability, Reputation, Objectivity, Free-0f Error, Relevance, Completeness, Timeliness, Concise Representation (Ref 7.4)
Related Primary SLA Terms	TBD (Ref 7.9)
Related KPIs	VR (Ref 7.6)
Related CTQs	VRV (Ref 7.7)
Actors/Agents	Quality Manager
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the Issue to additional Agent with same Role 2. Update the Issue 3. Log the Delegation Delegation Rule -2: Agent Overloaded 1. Delegate the Issue to additional Agent with same Role 2. Update the Issue 3. Log the Delegation
Escalation	Rule 1: Performance or operational or legal Issues 1. Escalate to environmental services department head.

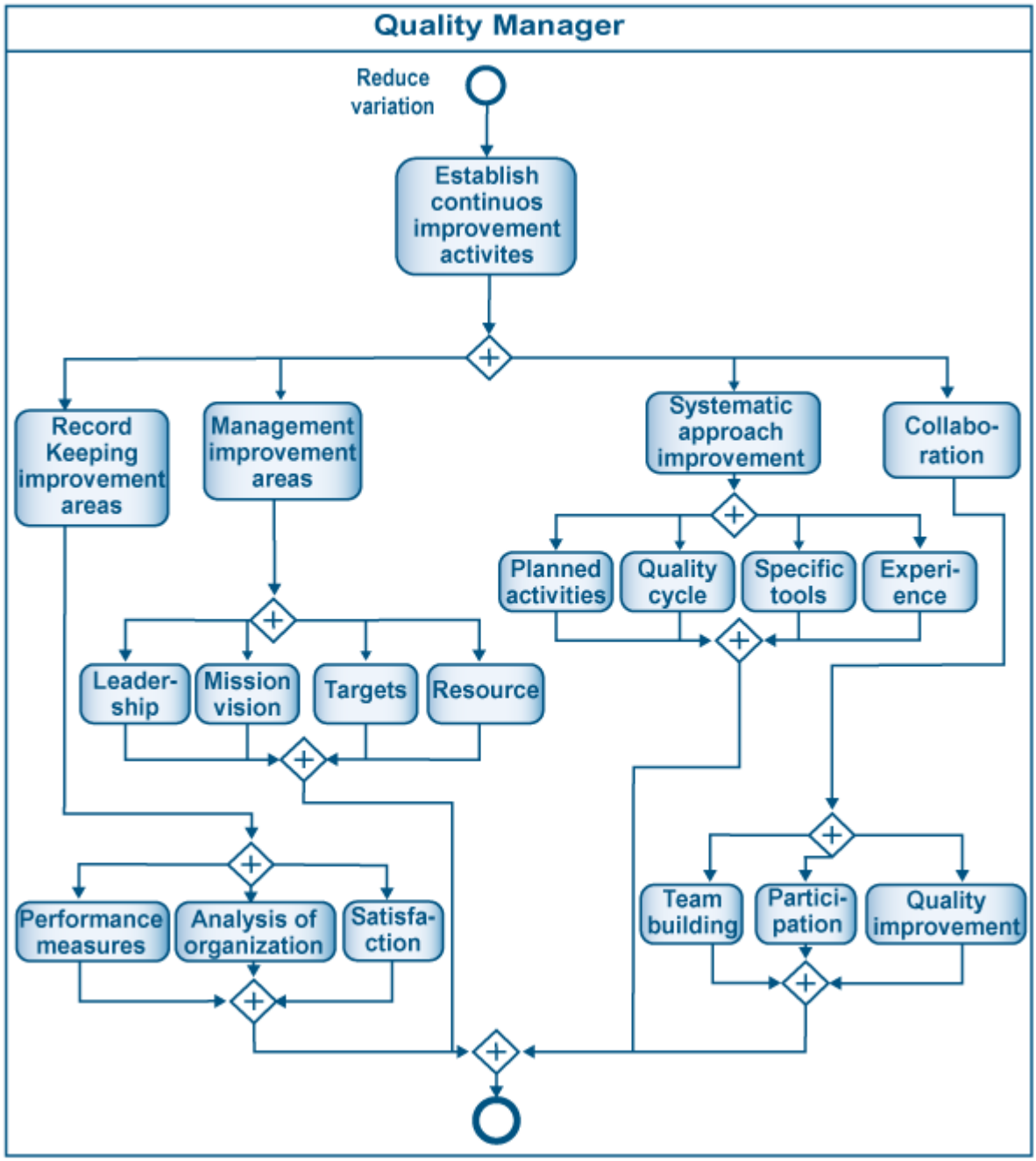
	2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.16
Other References	Appendix A: Business Process Modeling Notation Reference Appendix B: Chain of Infection

6.18 Sub Process – Reduce Variation Roles and Responsibilities

Roles	Responsibilities
Quality Manager	• Quality manager identifies variation (common cause and specific cause) • Quality manager defines quality goals and related task (explicit as well as implicit tasks) • Quality Manager establishes measure phases(identification of parameters (population, sampling, hypothesis, sample size) data collection categories (instantaneous data collection, implicit plan and explicit plan) and sampling techniques (simple random sampling, systematic sampling, stratified sampling, line intercept sampling) • Quality Manager establishes analyzes phase (via ishikawa diagram, pareto analysis and root cause tree) • Quality Manager improves the overall procedures and work flow • Quality manager controls the process.

6 Quality Coordination Management Process

6.19 Sub Process – Establish Continuous Improvement Practices



6 Quality Coordination Management Process

6.20 Sub Process – Establish Continuous Improvement Practices Needs Specification

Specification	Description
Summary/Purpose	The purpose of this process is to establish continuous improvement practices.
Scope	This is a level 1 Process Specification.
Primary Reference	• Lean waste minimization • Six sigma quality model
Related ESM Practices	Infection control coordination, Nurse coordination, security coordination, hospital information system coordination, inter environment services coordination, Anomalies Management.
Related Business Driver	Continuous improvement
Related Operational Policies	OP-008 (Ref 7.5)
Assumptions	Senior Management Support exists.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for quality coordination Management

6 Quality Coordination Management Process

<table>
<tr><td>MSD Management</td><td>Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)</td></tr>
<tr><td>EBC Procedures</td><td>None</td></tr>
<tr><td>Timing Dimension</td><td><table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table></td></tr>
<tr><td>Trigger</td><td>• Reduce variation</td></tr>
<tr><td>Basic Course of Event</td><td>Continuous Improvement process
1. Quality manager establish continuous improvement activities for record keeping improvement areas (performance measures, analysis of organization, satisfaction), management improvement areas (leadership, mission & vision, targets, resource), systematic approach improvement (planned activities, quality cycle, specific tools, experience) and collaboration (team building, participation, quality improvement)
2. End</td></tr>
<tr><td>Alternative Path</td><td>None</td></tr>
<tr><td>Exception Path</td><td>System Down
1. Keep paper track until system is up and running
2. Update the System and clear all logs.
3. End.</td></tr>
<tr><td>Extension points</td><td>Optimizing of coordination</td></tr>
<tr><td>Preconditions</td><td>There exists a capability to monitor the performance of outsourcing control mechanism.</td></tr>
<tr><td>Post -conditions</td><td>Optimization of coordination</td></tr>
<tr><td>Related Business Rules</td><td>BR-008 (Ref 7.1)</td></tr>
<tr><td>Related Risks</td><td>RR-005 (Ref. 7.2)</td></tr>
</table>

6 Quality Coordination Management Process

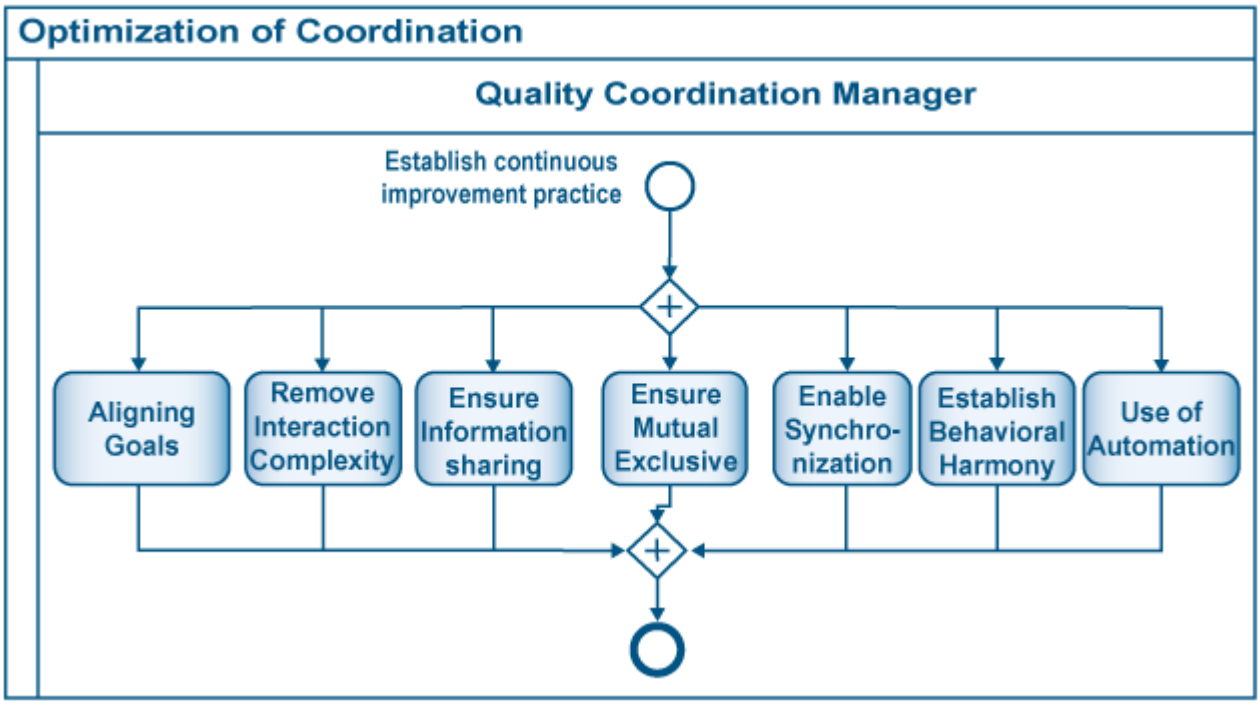
Related Quality Attributes	Reliability, Usability, Data Integrity, Non-repudiation, Accountability, Performance, Auditability, Service reliability, confidentiality, authenticity, availability, non repudiation, testability (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Objectivity, Relevance, Completeness, timeliness, Understandability, interpretability, Reputation, Objectivity, Free-0f Error, Relevance, Completeness, Timeliness, Concise Representation (Ref 7.4)
Related Primary SLA Terms	TBD (Ref 7.9)
Related KPIs	ITR (Ref 7.6)
Related CTQs	ITRV (Ref 7.7)
Actors/Agents	Quality Manager
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the Issue to additional Agent with same Role 2. Update the Issue 3. Log the Delegation Delegation Rule -2: Agent Overloaded 1. Delegate the Issue to additional Agent with same Role 2. Update the Issue 3. Log the Delegation
Escalation	Rule 1: Performance or operational or legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.19
Other References	Appendix A: Business Process Modeling Notation Reference Appendix B: Chain of Infection

6 Quality Coordination Management Process

6.21 Sub Process – Establish Continuous Improvement Practices Roles and Responsibilities

Roles	Responsibilities
Quality Manager	Quality manager establish continuous improvement activities for record keeping improvement areas (performance measures, analysis of organization, satisfaction), management improvement areas (leadership, mission & vision, targets, resource), systematic approach improvement (planned activities, quality cycle, specific tools, experience) and collaboration (team building, participation, quality improvement)

6.22 Sub Process – Optimization of Coordination



6 Quality Coordination Management Process

6.23 Sub Process – Optimization of Coordination Specification

Specification	Description
Summary/Purpose	To establish the process to optimize coordination for quality Coordination.
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six Sigma standard, NHS, OSHA
Related ESM Practices	Infection control coordination, Nurse coordination, security coordination, hospital information system coordination, inter environment services coordination, Anomalies Management.
Related Business Driver	Optimization of the coordination process.
Related Operational Policies	OP-003 (Ref. 7.5)
Assumptions	• Inputs to the process are accurate.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality Coordination

6 Quality Coordination Management Process

<table>
<tr><td>MSD Management</td><td>Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)</td></tr>
<tr><td>EBC Procedures</td><td>None</td></tr>
<tr><td>Timing Dimension</td><td><table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table></td></tr>
<tr><td>Trigger</td><td>• Establish continuous improvement practices</td></tr>
<tr><td>Basic Course of Event</td><td><u>Optimization of coordination</u>
1. Quality Coordination Manager aligns goals, removes interaction complexity, ensures information sharing, ensures mutual exclusiveness (avoid deadlock and starvation), enable synchronization, establish behavioral harmony, ensure use of automation.
2. End</td></tr>
<tr><td>Alternative Path</td><td>None</td></tr>
<tr><td>Exception Path</td><td>System Down
1. Keep paper track until system is up and running
2. Update the System and clear all logs.
3. End.</td></tr>
<tr><td>Extension points</td><td>Monitoring process.</td></tr>
<tr><td>Preconditions</td><td>This process is supported by automated tools.</td></tr>
<tr><td>Post -conditions</td><td>Coordination process is optimized.</td></tr>
<tr><td>Related Business Rules</td><td>BR-003 (Ref 7.1)</td></tr>
<tr><td>Related Risks</td><td>RR-002(Ref. 7.2)</td></tr>
</table>

6 Quality Coordination Management Process

Related Quality Attributes	Reliability, Accountability, Performance, Auditability, Extensibility (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Reputation, Objectivity, free of error, Relevance, completeness, Value added, Believability (Ref 7.4)
Related Primary SLA Terms	(Ref 7.9)
Related KPIs	DR(Ref 7.6)
Related CTQs	DRV (Ref 7.7)
Actors/Agents	Quality Coordination Manager.
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance, operational legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.16
Other References	Appendix A: Business Process Modeling Notation Reference Appendix B: Chain of Infection

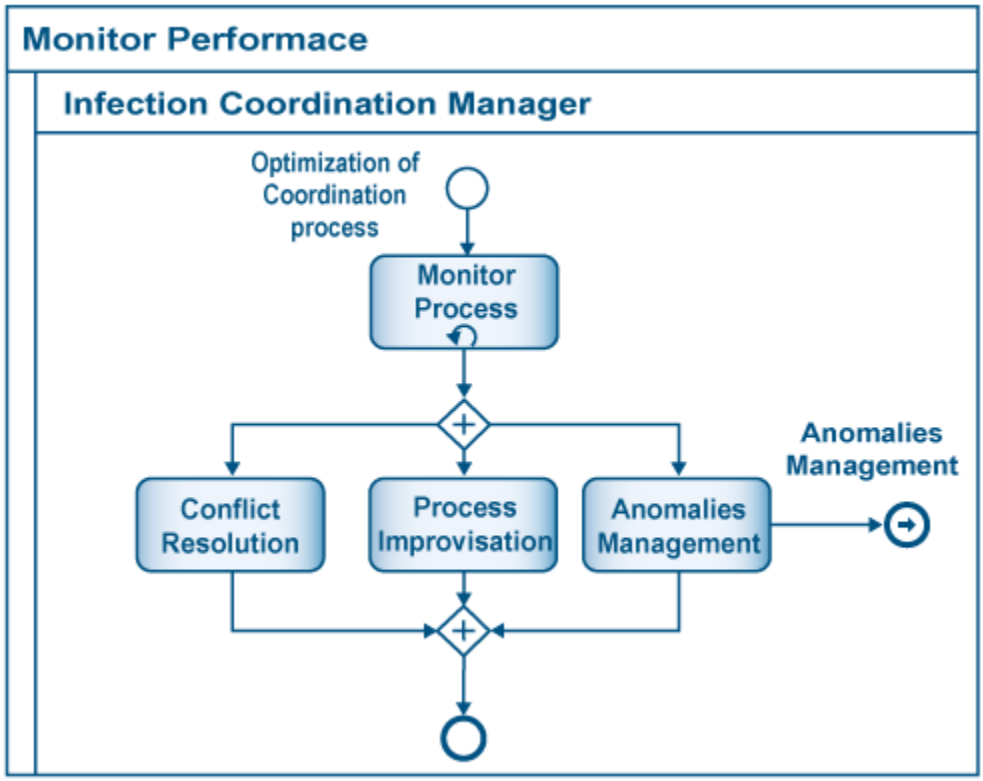
6 Quality Coordination Management Process

6.24 Sub Process – Optimization of Coordination Roles and Responsibilities

Roles	Responsibilities
Quality Coordination Manager	• Performs optimization of this process.

6 Quality Coordination Management Process

6.25 Sub Process – Monitor Performance



6 Quality Coordination Management Process

6.26 Sub Process – Monitor Performance Specification

Specification	Description
Summary/Purpose	To establish the process of monitoring the process performance.
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six Sigma standard, NHS, OSHA
Related ESM Practices	Infection control coordination, Nurse coordination, security coordination, hospital information system coordination, inter environment services coordination, Anomalies Management.
Related Business Driver	Process improvement.
Related Operational Policies	OP-004 (Ref. 7.5)
Assumptions	• Inputs to the process are accurate.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality Coordination

6 Quality Coordination Management Process

<table>
<tr><td>MSD Management</td><td>Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)</td></tr>
<tr><td>EBC Procedures</td><td>None</td></tr>
<tr><td>Timing Dimension</td><td><table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table></td></tr>
<tr><td>Trigger</td><td>• Optimization of coordination</td></tr>
<tr><td>Basic Course of Event</td><td><u>Monitoring performance</u>
1. Quality Coordination Manager monitors process continuously for conflict resolution, process improvisation, and anomalies management.
2. End</td></tr>
<tr><td>Alternative Path</td><td>None</td></tr>
<tr><td>Exception Path</td><td>System Down
1. Keep paper track until system is up and running
2. Update the System and clear all logs.
3. End.</td></tr>
<tr><td>Extension points</td><td>Anomalies Management</td></tr>
<tr><td>Preconditions</td><td>This process is supported by automated tools.</td></tr>
<tr><td>Post -conditions</td><td>Coordination process is improved.</td></tr>
<tr><td>Related Business Rules</td><td>BR-004(Ref 7.1)</td></tr>
<tr><td>Related Risks</td><td>RR-005(Ref. 7.2)</td></tr>
<tr><td>Related Quality Attributes</td><td>Reliability, Accountability, Performance, Auditability, Extensibility (Ref 7.3)</td></tr>
</table>

6 Quality Coordination Management Process

Related Data Quality Dimensions	Accuracy, Reputation, Objectivity, free of error, Relevance, completeness, Value added, Believability (Ref 7.4)
Related Primary SLA Terms	(Ref 7.9)
Related KPIs	CRR (Ref 7.6)
Related CTQs	CRRV (Ref 7.7)
Actors/Agents	Quality Coordination Manager.
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance, operational legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	Section 5.1
Process Model	Section 6.19
Other References	Appendix A: Business Process Modeling Notation Reference Appendix B: Chain of Infection

6 Quality Coordination Management Process

6.27 Sub Process – Monitor Performance Roles and Responsibilities

Roles	Responsibilities
Quality Coordination Manager	• Quality Coordination Manager monitors process continuously for conflict resolution, process improvisation, and anomalies management

7

Quality Coordination Management

Reference

7 Reference

This chapter serves as a prime reference to Chapter 6 and presents the details supporting Chapter 6 in tabular formats. This chapter consists of various variable values which would frequently evolve or change as organization's Environmental Services' Quality Coordination Management process matures or changes.

At minimal this document can be updated biannually. However, if need arises this document may be updated earlier than its prescribed revision period.

7.1 Business Rules

BR ID	Description	Context	Rule	Source
BR-001	Infection control team enjoys full authority for the Quality Coordination process.	Operations	TBD	NA
BR-002	All quality coordination related processes would be managed at a micro level	Operations	TBD	NA
BR-003	Automated tools should be used everywhere possible for optimizing the process.	Operations	TBD	NA
BR-004	All coordination activities would be monitored for improvement	Operations	TBD	NA
BR-005	All coordination needs would be analyzed	Operations	TBD	NA
BR-006	All quality coordination wastes should be minimized.	Operations	TBD	NA
BR-007	Lean Six sigma would be use as the prime standard for variance minimization	Business	TBD	TBD
BR-008	All quality initiatives should be improvised.	Business	TBD	TBD

7 Reference

7.2 Risk

Risk ID	Description	Source	Severity Level	Status	Resolution
RR-001	Infection control team member doesn't have right mix of people.	NA	Medium	NA	The board members should be all well qualified and should belong to different departments of the organization which are vital for the success of this process.
RR-002	Lack of accuracy	NA	High	NA	Employ automated tools and techniques wherever possible.
RR-003	Lack of Monitoring of performance	NA	High	NA	Employ automated tools for monitoring.
RR-004	Staff do not follow the quality program	NA	High	TBD	Staff should be well trained and familiarized with the quality process so that they would act as desired.
RR-005	The improvement practices are not in line with the goals	NA	High	TBD	The improvement practices should be aligned to the target objective via proper discussion so that it is acceptable to all.

7.3 Quality Attribute

QA ID	Description	Threshold
QA-001	Interoperability	TBD
QA-002	Reliability	TBD
QA-003	Service Reliability	TBD
QA-004	Availability	TBD
QA-005	Usability	TBD

QA-006	Normal Usability Operations	TBD
QA-007	Confidentiality	TBD
QA-008	Authenticity	TBD
QA-009	Data Integrity	TBD
QA-010	Availability	TBD
QA-011	Non-repudiation	TBD
QA-012	Accountability	TBD
QA-013	Security Integration	TBD
QA-014	Performance	TBD
QA-015	Scalability	TBD
QA-016	Extensibility	TBD
QA-017	Adaptability	TBD
QA-018	Testability	TBD
QA-019	Auditability	TBD
QA-020	Operability and Deployability	TBD

7.4 Data Quality Dimension

DQ ID	Description	Threshold
DQ-001	Accuracy	TBD
DQ-002	Believability	TBD
DQ-003	Reputation	TBD
DQ-004	Objectivity	TBD

DQ-005	Free-of-Error	TBD
DQ-006	Value Added	TBD
DQ-007	Relevance	TBD
DQ-008	Completeness	TBD
DQ-009	Timeliness	TBD
DQ-010	Appropriate Amount	TBD
DQ-011	Understandability	TBD
DQ-012	Interpretability	TBD
DQ-013	Concise Representation	TBD

7.5 Operation Policy

Policy ID	Description	Context	Importance (1-5)
OP-001	All members of the team would be appointed for a period of 1 year.	Operations	TBD
OP-002	All critical process and their supporting processes would be decomposed to activities level for better understanding	Operations	TBD
OP-003	Optimization should be done via automated tools	Operations	TBD
OP-004	All anomalies identified should be escalated to the anomalies management process.	Operations	TBD

OP-005	All coordination needs would be categorized to ensure total comprehensive coverage.	Operations	TBD
OP-006	Seven plus three model would be implemented to minimize the wastes	Operations	TBD
OP-007	All staff which deal with the performance of this process would be fully trained six sigma trained	TBD	TBD
OP-008	Improvements should be monitored regularly	TBD	TBD

7.6 KPI

Name	Acronym	Description	Context	Importance	Soft Threshold	Hard Threshold
Coordination budgeting	**CB**	Percentage of budget spend of quality coordination	TBD	TBD	TBD	TBD
Waste Minimization Rate	**WMR**	Percentage of waste minimized per quality process	TBD	TBD	TBD	TBD
Quality Coordination effective rate	**QCER**	Increase or decrease in the infection control rate	TBD	TBD	TBD	TBD

7 Reference

Coordination needs rate	**CNR**	Number of needs per category.	TBD	TBD	TBD	TBD
Number of coordination points	**NCP**	Number of coordinating points per process	TBD	TBD	TBD	TBD
Deviation rate	**DR**	Number of coordination deviations per quality process	TBD	TBD	TBD	TBD
Conflict resolution rate	**CRR**	Number of conflicts resolved per month	TBD	TBD	TBD	TBD
Variation rate	**VR**	percentage decrease in variation	NA	TBD	TBD	TBD
Improvement Target rate	**ITR**	Number of improvement targets met per month	NA	TBD	TBD	TBD

7.7 CTQ

Name	Acronym	Description	Context	Importance	Soft Threshold	Hard Threshold
Coordination budgeting variation	**CBV**	Standard deviation of CB	TBD	TBD	TBD	TBD

7 Reference

Waste Minimization Rate variation	**WMRV**	Standard deviation of WMR	TBD	TBD	TBD	TBD
Quality Coordination effective rate variation	**QCERV**	Standard deviation of QCERV	TBD	TBD	TBD	TBD
Coordination needs rate variation	**CNRV**	Standard deviation of CNR	TBD	TBD	TBD	TBD
Number of coordination points variation	**NCPV**	Standard deviation of NCP	TBD	TBD	TBD	TBD
Deviation rate variation	**DRV**	Standard deviation of DR		TBD	TBD	TBD
Conflict resolution rate variation	**CRRV**	Standard deviation of CRR	NA	TBD	TBD	TBD
Device related infection rate	**DRIRV**	Standard Deviation of DRIR	NA	TBD	TBD	TBD
Environment related infection rate	**ERIRV**	Standard Deviation of ERIR	NA	TBD	TBD	TBD

7 Reference

Motion Optimization Measure	**MOM**	Management of motion optimization measure	NA	TBD	TBD	TBD
Paper work Optimization Measure	**PWOM**	Management of Paper work Optimization Measure	NA	TBD	TBD	TBD
Correction reduction measure	**CRM**	Management of Correction reduction measure	NA	TBD	TBD	TBD
Materials Optimization Measure	**IOM**	Management of Materials Optimization Measure	NA	TBD	TBD	TBD
Transportation Optimization Measure	**TOM**	Management of Transportation Optimization Measure	NA	TBD	TBD	TBD
Waiting Reduction Measure	**WRM**	Management of Waiting reduction Measure	NA	TBD	TBD	TBD
Delays reduction measure	**DRM**	Management of delays	NA	TBD	TBD	TBD

		reduction measure				
Variation rate variation	**VRV**	Standard deviation of VR	NA	TBD	TBD	TBD
Improvement Target rate variation	**ITRV**	Standard deviation of ITR	NA	TBD	TBD	TBD

7.8 Abstract Time – Scale

Name	Acronym	Description	Quantification
TBD	**TBD**	TBD	TBD

7.9 SLA Terms

SLA ID	Description	Context	KPI	CTQ
TBD	**TBD**	**TBD**	**TBD**	**TBD**

7.10 Voice of Customer

VOC	Customer	Description	Perceived Value
Hygiene	Doctors, Patients, Nurses, Housekeeping Supervisors, Housekeepers, Clerks, Visitors, Environmental	The environment should be attributing with great hygiene level.	• High quality healthcare services • Safe environment

	Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker.		• Low infection rate • Low risk
High and Consistent Quality of standards	Doctors, Patients, Nurses, Housekeeping Supervisors, Clerks, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	High and Consistent Quality of standards.	• Reputation of organization or hospital • Professionalism • Trust • Positive psychological bias
Free of Infections	Doctors, Patients, Nurses, Housekeeping Supervisors, Clerks, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	Infections free and healthy environment.	• Safe environment • Reputation of hospital or organization • Trust • Quick healing • Positive psychological bias • Low risk
Timely Services	Doctors, Patients, Nurses, Housekeeping Supervisors, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste	The response time for any request should be very short.	• Professionalism • Trust • Positive psychological bias • Reputation of hospital or organization • Safe environment

	management worker, Housekeepers		
High Coordinating	Doctors, Patients, Nurses, Housekeeping Supervisors, Clerks, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	There should be high level of coordination between hospital employees and departments.	• Professionalism • Trust • Low risk • Excellent Ergonomic
Remove Waste	Patients, Nurses, Housekeeping Supervisors, Clerks, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	Wastes should be either removed or minimized.	• Safe environment • Low infection rate • Low risk • Reputation of hospital or organization • Low cost • Timely response • High quality
Excellent Ergonomic	Doctors, Patients, Nurses, Housekeeping Supervisors, Clerks, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	The hospital environment and policy should comply with physical, organization and cognitive ergonomics.	• Professionalism • Trust • Job accuracy • Excellent communication • Low risk • Reputation of hospital or organization

Safety	Doctors, Patients, Nurses, Housekeeping Supervisors, Clerks, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	Hospital environment should comply with occupational health and safety procedures.	• Safe environment • Professionalism • Low risk
Appearance	Housekeeping Supervisors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	The appearance of the workers, supervisors and manager should induce positive biases.	• Professionalism • Reputation of hospital or organization • Trust • Positive psychological bias
Excellent Worker Attitude	Housekeeping Supervisors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	The environment service employee should be free from negative attitudes.	• Professionalism • Reputation of hospital or organization • Trust • Positive psychological bias • Minimum disputes • Less employee turn over

7.11 Customer Context Matrix

Name of Customer	Acronym	Context of Customer	Coordination Process Area
Doctors	DOC	Direct	HIS Coordination

7 Reference

Patients	PAT	Direct	HIS Coordination
Nurses	NUR	Direct	HIS Coordination, Nurse Coordination
Housekeeping Supervisors	HKS	Direct	Quality Coordination, Nurse Coordination, infection control coordination
Clerks	CLR	Direct	HIS Coordination
Visitors	VIS	Indirect	HIS Coordination
Environmental Services Management	ESM	Direct	Nurse Coordination, infection control coordination
Other hospital workers	OHW	Indirect	Security coordination
Laundry worker	LDW	Direct	Nurse Coordination, HIS Coordination
Transportation worker	TRW	Direct	Quality Coordination, HIS Coordination
Maintenance worker	MAW	Direct	Quality Coordination, HIS Coordination
Waste management worker	WMW	Direct	Quality Coordination, HIS Coordination

Infection control professional	ICP	Indirect	Infection Control Coordination
Housekeepers	HK	Direct	HIS Coordination, Nurse Coordination

7.12 MSD Attributes

MSD Attribute	Description
Lifting/carrying	Large vertical movements, long carry distances.
Disability	Pose a risk to those with a health problem or a physical or learning disability.
Force	High initial forces to get the load moving.
Loaded motion	High forces to keep the load in motion.
Physical ergonomics	Constraints on body posture/positioning, confined spaces/narrow doorways.
Posture change	Strong force and awkward movement/posture. E.g. bent wrists.
Excessive force	Excessive force to grip raw materials, product or tools
Scarceness	Inadequate tools for repetitive use screwdrivers, pliers, hammers.
Noise	Noise which cause stress and muscle tension.
Concentration	Tasks require high levels of attention/concentration especially where the worker has little control over allocation of effect to the task.
Floor hazards	Remove slip and trip hazards through provision of appropriate floor surfaces and good keeping.
Clothing	Clothing/PPE may prevent sufficient movement for the task or reduce capability. E.g. to grip consider handling needs when selecting work wear/gloves.

7 Reference

Psychosocial factors	Adverse psychosocial factors can increase the potential for manual handling injuries. A workers psychosocial response to work and the workplace conditions can affect their health in general and MSDs in particular. The factors include the content, design, organization and management of the work

Glossary / Acronyms

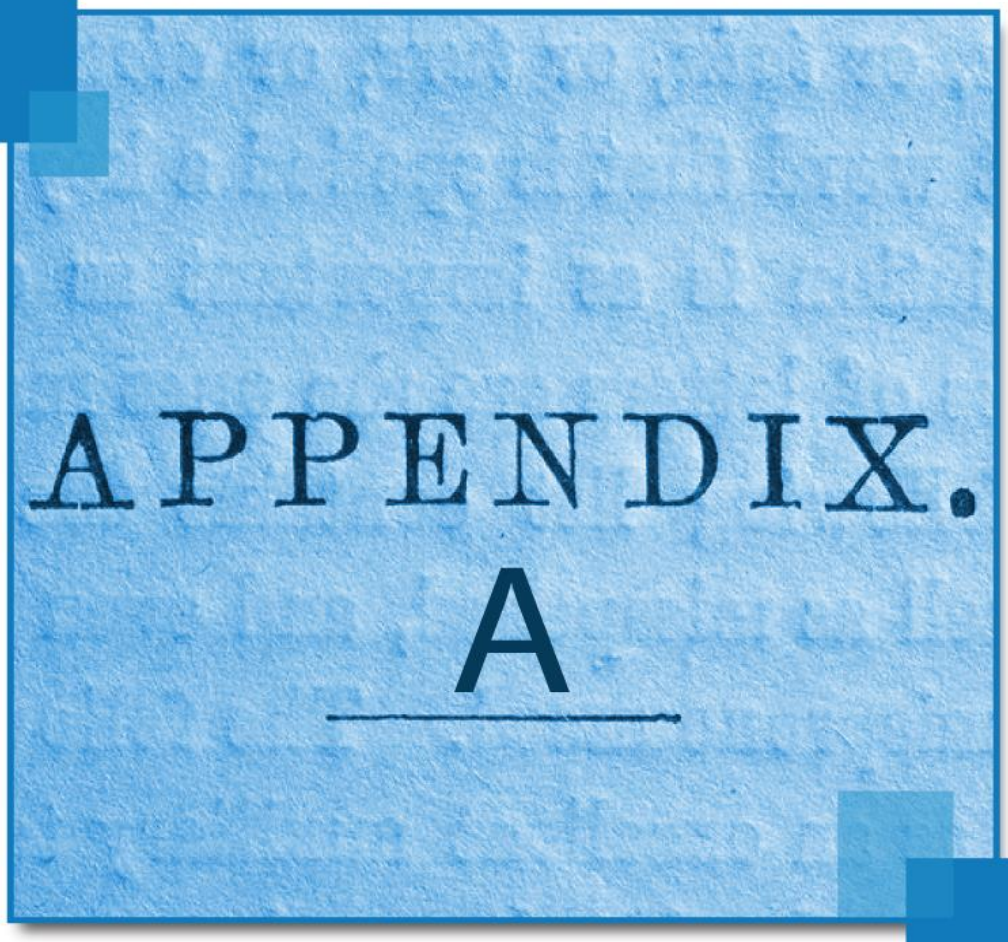
8 Glossary / Acronyms

Terminology	Description
Abstract Time Scale	Time Scale that will be quantified both during operations and continuous process improvement. These time identifiers are correlated with the soft thresholds that are dynamically specified during life span of the process.
BPMN	**Business Process Modelling Notation** Business Process Modelling Notation is the practice of documenting an organisation's key business processes in a graphical format.
Business Rules	Business Rules are intended to assert business structure or to control or influence the behaviour of the Business. Business rules describe the operations, definitions and constraints that apply to an organization
CRR	Contract Review Rate
CRRV	Contract Review rate Variation.
CTQ	**Critical to Quality** Critical To Quality (CTQ) is continuous measuring and monitoring tool agreed between the internal processes to achieve greater customer satisfaction.
Data Quality Dimensions	The totality of features and characteristics of data that bears on their ability to satisfy a given purpose
EBC	Evidence based Cleaning
ESM	Environmental services Map
KPI	**Key Performance Indicator** A metric that is used to help manage a process, IT service or activity. Many metrics may be measured, but only the most important of these are defined as KPIs and used to actively manage and report on the process, IT service or activity. KPIs should be selected to ensure that efficiency, effectiveness, and cost effectiveness are all managed.
MSD	Macro skeleton Disorder
OLA	**Organization level Agreement**

8 Glossary / Acronyms

	An Agreement between an IT Service Provider and another part of the same Organization
Operational Policy	Rules defined to operate the process.
Quality Attributes	Quality attributes are non-functional requirements used to evaluate the performance of a process.
Risk	A possible event that could cause harm or loss, or affect the ability to achieve Objectives. A risk is measured by the probability of a threat, the vulnerability of the asset to that threat, and the impact it would have if it occurred.
SLA	**Service Level Agreement** An Agreement between an IT Service Provider and a Customer. The SLA describes the IT Service, documents Service Level Targets, and specifies the responsibilities of the IT Service Provider and the Customer
VOC	**Voice of Customer**

Appendix A: Business Process Modeling Notation Reference



9 Appendix A: Business Process Modeling Notation Reference

INTRODUCTION

Business Process Modelling ("BPM") is the practice of documenting an organisation's key business processes in a manner which:

- Is highly graphical
- Focuses on business terminology rather than technical
- Allows all business steps/tasks to be included, not just those which involve a computer system

Mentioned below are the various core concepts of BPMN with the relevant definition and graphic notation.

PROCESS START

All processes have to start somehow, general notation for a process models commence with the START event, is a circle.	
One can use simply the *basic unmarked* start event as above, or one of the different types of start event, to provide more detail as described below.	
If a process starts when some sort of message arrives, mail, email, text. Following notation can be used	**Message start** 
If a process starts by virtue of the passage of time – e.g. 1st Jan review or 4 days after the purchase order is sent, following notation can be used	**TIMER Start** 
If the process starts when a rule/condition is met – e.g. when Incident Impact is more than 100,000.	**RULE Start** 
If a process starts when another process finishes. Following notation can be used	**LINK Start** 
If there is more than one 'trigger' for a process to start. Following notation can be used	**MULTIPLE Start** 

9 Appendix A: Business Process Modeling Notation Reference

TASK AND SUB PROCESS

Task	Task is a lowest level activity in a process map. A task is used when the work is not broken down to a finer level of detail	
Sub Process	A Sub-process is a compound activity which can be broken down into finer details.	
Loops	Loops task or sub process continues to iterate until the loop condition is true.	

INTERMEDIATE EVENTS

Following notation can be used to display the intermediate event, similar to start and end events.

BASIC	MESSAGE	TIMER	RULE	LINK	MULTIPLE
					

PROCESS END

All processes have to end somehow, general notation for a process models end will be a circle with a solid line.	
One can use simply use the *basic* end event as above, or you can use one of the different types of end event, to provide more detail, as described below:	

9 Appendix A: Business Process Modeling Notation Reference

If a process ends by something being sent via a message of some sort e.g., mail, email, document, following notation can be used.	MESSAGE End 
If the end of this process causes the start of another, following notation can be used.	LINK End 
If more than one consequence of the process ending, following notation can be used.	MULTIPLE End 

SWIMLANES

Pool	A *Pool* represents a participant in a Process. It is also acts as a "swimlane" and a graphical container for partitioning a set of activities from other Pools	
Lane	A *Lane* is a sub-partition within a Pool and will extend the entire length of the Pool, either vertically or horizontally. Lanes are used to organize and categorize activities.	

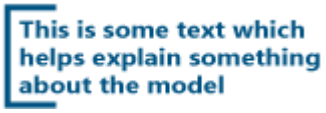
CONNECTORS

Sequence Flow	A *Sequence Flow* is represented by a solid line with a solid arrowhead (see the figure to the right) and is used to show the order (the sequence) that activities will be performed in a Process.	

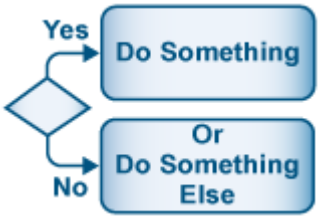
9 Appendix A: Business Process Modeling Notation Reference

Message Flow	A *Message Flow* is represented by a dashed line with an open arrowhead (see the figure to the right) and is used to show the flow of messages between two separate Process Participants. In BPMN, two separate Pools in the Diagram will represent the two Participants.	

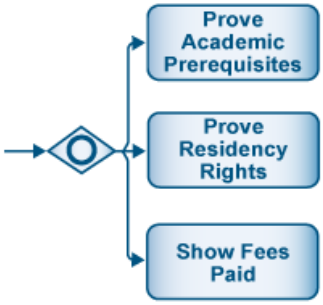
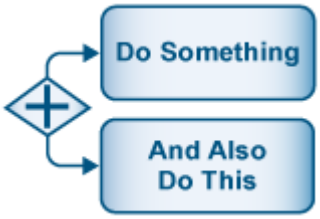
ARTIFACTS

Annotation	The ANNOTATION shape is used to add comments to a process model. It consists of text in a square left bracket	
Data Object	A data object represents a piece of data which is required or produced by the process eg. Customer details, output.	
Group	A grouping is purely for documentation or explanatory purposes. It has no impact on the model. It consists of a rectangle with dashed lines and rounded corners, usually enclosing other objects.	

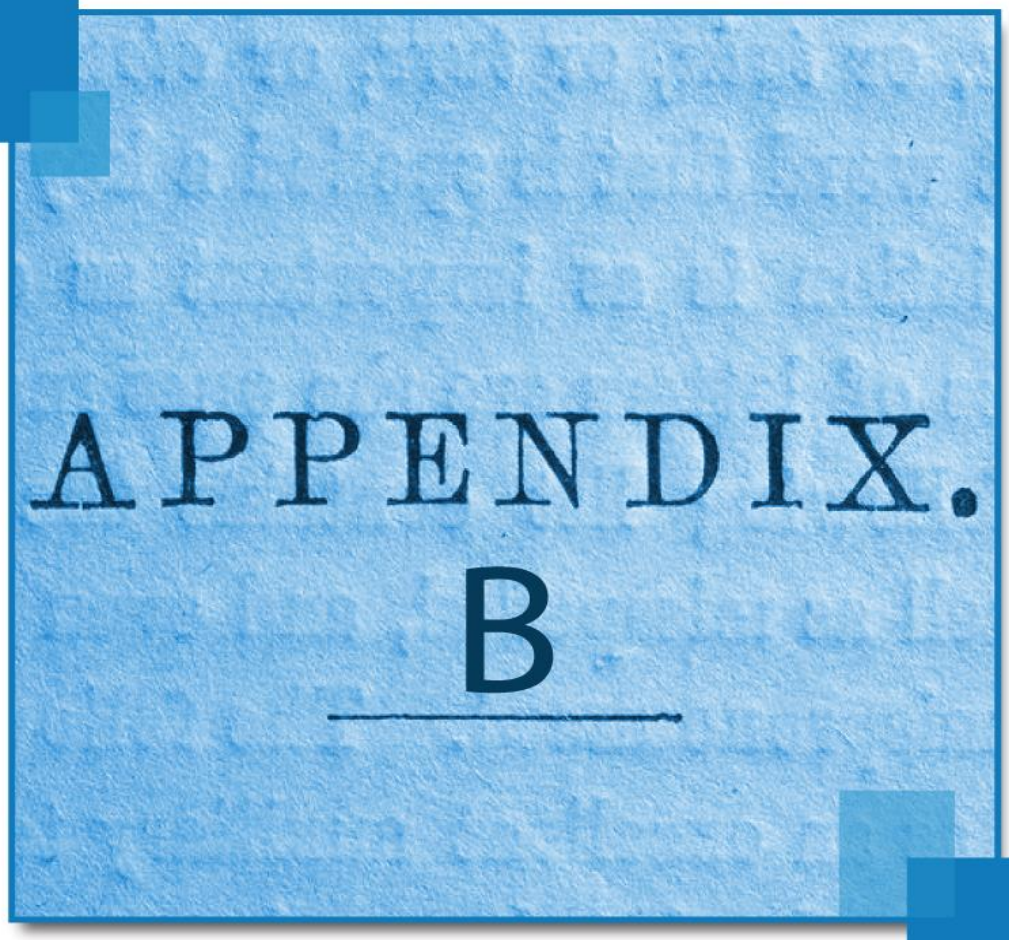
GATEWAYS

Exclusive	The values of the process are examined to determine which path to take	

9 Appendix A: Business Process Modeling Notation Reference

Inclusive	Each branch will be evaluated and will not stop when one branch condition becomes true.	
Parallel	Provides a mechanism to synchronise parallel flow and to create parallel flow.	

Appendix B: Chain of Infection



10 Appendix B: Chain of Infection

In order to control or prevent infection it is essential to understand that transmission stages of a pathogen resulting in infection requires the six vital links (Refer to the table below).

Each link mentioned below must be present for infection or colonization to proceed, and breaking any of the links can prevent the infection.

The section below details out the six stages:

Stage	Link	Description
1	Infectious Agent	Any disease-causing microorganism (pathogen)
2	The Reservoir Host	The organism in which the infectious microbes reside
3	The Portal of Exit	Route of escape of the pathogen from the reservoir.
4	The Route of Transmission	Method by which the pathogen gets from the reservoir to the new host
5	The Portal of Entry	Route through which the pathogen enters its new host
6	The Susceptible Host	The organism that accepts the pathogen

Link 1: Infectious Agent

The causative agent for infection is any microorganism capable of producing disease. Microorganisms responsible for infectious diseases include bacteria, viruses, rickettsiae, fungi, and protozoa. Sometimes, microorganisms are part of patient's own body flora and can cause infection in the immunocompromised host. These infections are called endogenous infections. Infections which are acquired from external sources are called exogenous infections.

Link 2: Reservoir Host

The second link in the chain of infection is the reservoir, i.e. the environment or object in or on which a microorganism can survive and, in some cases, multiply. Inanimate objects, human beings, and animals can all serve as reservoirs, providing the essential requirements for a microorganism to survive at specific stages in its life cycle.

10 Appendix B: Chain of Infection

Infectious reservoirs abound in health care settings, and may include everything from patients, visitors, and staff members to furniture, medical equipment, medications, food, water, and blood.

Link 3: Portal of Exit

The portal of exit is the path by which an infectious agent leaves its reservoir. Usually, this portal is the site where the microorganism grows. Common portals of exit associated with human reservoirs include the respiratory, genitourinary, and gastrointestinal tracts, the skin and mucous membranes and the placenta (transmission from mother to fetus)

Link 4: Route of Transmission

The microorganism can be acquired by inhalation (through respiratory tract), ingestion (through gastrointestinal tract), inoculation (through accidental sharp injury or bites), contact (during sexual intercourse) and transplacental transmission (microbes may cross placenta from the mother to fetus). It is important to remember that some microorganisms use more than one transmission route to get from the reservoir to a new host.

Of the six links in the chain of infection, the mode of transmission is the easiest link to break and is key to control of cross-infection in hospitals.

Link 5: The Portal of Entry

The portal of entry is the path by which an infectious agent invades a susceptible host. Usually, this path is the same as the portal of exit. For example, the portal of entry for tuberculosis and diphtheria is through the respiratory tract, hepatitis B and Human Immunodeficiency Virus enter through the bloodstream or body fluids and Salmonella enters through the gastrointestinal tract. In addition, each invasive device, e.g. intravenous line, creates an additional portal of entry into a patient's body thus increasing the chance of developing an infection.

Link 6: The Susceptible host

The final link in the chain of infection is the susceptible host. The human body has many defense mechanisms for resisting the entry and multiplication of pathogens. When these mechanisms function normally, infection does not occur. However, in immunocompromised patients, where the body defenses are weakened, infectious agents are more likely to invade the body and cause an infectious disease. In addition, the very young and the very old are at higher risk for infection because in the very young the immune system does not fully develop until about age 6 months, while old age is associated with declining immune system function as well as with chronic diseases that weaken host defenses.