# COLLABORATIVE CLINICAL PRACTICE ACROSS HEALTHCARE SPECIALTIES: INSIGHTS FROM DENTAL, NURSING, LABORATORY, AND MEDICAL RECORDS TEAMS IN SECURITY FORCES FACILITIES

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### Abstract

**Background:**

Effective interprofessional collaboration is essential for delivering high-quality healthcare, particularly in complex institutional settings. Security forces medical facilities present unique challenges due to hierarchical structures, confidentiality protocols, and departmental silos, which may hinder communication and coordinated care.

**Objective:**

This study investigates the nature, effectiveness, and barriers to collaboration among dental, nursing, laboratory, and medical records teams within security-focused healthcare institutions.

**Methods:**

A mixed-methods explanatory sequential design was employed. The quantitative phase involved a structured survey administered to 120 professionals across four departments, assessing collaboration, communication, integration, and efficiency. Data were analyzed using descriptive statistics, Pearson correlation, and regression analysis. In the qualitative phase, semi-structured interviews with 16 participants were thematically analyzed to deepen understanding of systemic and interpersonal dynamics.

**Results:**

Quantitative findings revealed moderate-to-high collaboration levels, with communication significantly predicting perceived efficiency ($\beta = 0.47$, $p < 0.001$). Nurses reported the highest collaboration scores, while medical records personnel showed the lowest. Thematic analysis identified four key barriers: communication disconnects, record redundancy, reliance on informal workarounds, and inconsistent leadership support. Departments with structured briefings and proactive leadership demonstrated smoother integration.

**Conclusion:**

Collaboration within security-based medical settings is marked by professional willingness but constrained by institutional structures. Enhancing interdepartmental communication, clarifying roles, and adopting secure interoperable systems are essential for strengthening teamwork. The study offers a context-sensitive framework for improving collaboration and patient care quality in highly regulated healthcare environments.

**Keywords:**

Interprofessional collaboration, healthcare teams, security forces facilities, communication, patient care, mixed-methods.

**Introduction**

The growing complexity of patient care in contemporary healthcare systems demands a coordinated, interdisciplinary approach to service delivery. As medical knowledge and technologies advance, care is increasingly delivered by teams composed of professionals from different disciplines—each contributing specialized expertise. The World Health Organization (WHO, 2010) has long emphasized that interprofessional collaboration (IPC) is a key mechanism for improving healthcare outcomes, patient safety, and system efficiency. Similarly, the Institute of Medicine (IOM, 2015) underlined the need for integrated care teams, particularly in high-pressure and resource-sensitive environments such as military or security-based healthcare systems.[1]

Interprofessional collaboration refers to the shared responsibility, communication, decision-making, and coordinated actions of healthcare workers from different specialties to provide the most effective patient-centered care. Research has consistently demonstrated that IPC reduces medical errors, enhances patient satisfaction, and streamlines workflows, particularly when care processes span across clinical, laboratory, and administrative domains. In primary and secondary healthcare settings, effective collaboration between nursing, dental, laboratory, and medical records teams is especially vital, given their interdependent roles in diagnosis, treatment, and care continuity [2]

In practice, however, silos often persist—particularly in systems that have rigid departmental hierarchies, confidentiality mandates, or limited digital interoperability. For example, dental professionals may operate independently of general nursing workflows, while laboratory and medical records departments may have minimal feedback loops with direct care providers. These disjunctions can result in service fragmentation, duplicative testing, increased administrative burden, and suboptimal patient outcomes. [3,4]

Despite substantial literature on IPC in general healthcare systems, relatively few studies have explored these dynamics within security forces medical facilities—where confidentiality, institutional discipline, and interdepartmental boundaries are more rigidly enforced. Given the unique structural, cultural, and operational constraints of such environments, it is imperative to investigate how collaboration manifests between teams such as dental, nursing, laboratory, and medical records units. This paper responds to that need by offering empirically grounded insights from security-based healthcare institutions.[5]

By identifying current collaboration patterns, communication bottlenecks, and systemic enablers, the study aims to bridge the gap between theory and practice in secure medical settings. Ultimately, it contributes to the design of context-specific strategies to foster integrated, efficient, and high-quality healthcare delivery in security-oriented environments.[6]

## 2.2 Problem Statement

While the benefits of interprofessional collaboration are well established, their realization in highly structured, security-based health institutions remains limited. Medical facilities operating under security forces—such as those affiliated with police, military, or national guard organizations—face unique challenges stemming from their hierarchical chains of command, restricted information-sharing protocols, and role-specific compartmentalization. In such systems, healthcare departments often function in isolation, with limited collaborative touchpoints beyond formal procedures.

This disjointed configuration leads to several inefficiencies: delayed care coordination due to redundant documentation, patient rework arising from misaligned diagnostics, and limited communication across specialties that impedes comprehensive care planning. For instance, dental procedures may not be communicated effectively with general medical staff, and laboratory results may not be integrated into care pathways in a timely manner. These inefficiencies not only burden clinicians but also jeopardize patient safety, especially when critical diagnostic information is siloed across departments.[7]

Moreover, the medical records teams—responsible for maintaining accurate and accessible health documentation—often lack real-time communication with frontline providers, leading to data inconsistencies and delays in patient handoffs. This fragmented environment risks undermining the goals of integrated care, particularly in systems that serve security personnel and their families, where trust, confidentiality, and efficiency are paramount.

Despite these challenges, empirical research into collaborative practices within such secure contexts is sparse. This study seeks to address that gap by examining the current state of collaboration among key clinical and administrative teams in security forces health facilities.[8]

## 2.3 Study Context

This study is situated within the healthcare infrastructure of security forces facilities—institutions typically affiliated with national police, internal security, or defense sectors. These organizations operate under strict governance models characterized by hierarchical leadership structures, closed information environments, and mission-driven clinical services tailored to personnel and their dependents. Such facilities are typically staffed by multidisciplinary professionals, including general physicians, dental surgeons, nurses, lab technicians, and health informatics officers.[9]

What sets these systems apart from public or civilian hospitals is their rigid departmentalization. Each unit operates under separate command chains, and collaboration is often limited to referral protocols rather than integrated care models. Additionally, due to the sensitive nature of the patient population—composed largely of active-duty personnel and their families—confidentiality regulations are stringent, further limiting the free exchange of patient information across teams.[10]

For example, a patient requiring both dental and internal medical services may undergo separate consultations and diagnostic procedures, without a centralized care plan or interprofessional dialogue. Similarly, laboratory and nursing staff may engage only during sample collection, with limited understanding of each other's workflows or constraints. These institutional norms, though designed to ensure control and security, inadvertently hinder inter-team communication and system-wide efficiency.[11,12]

Understanding collaboration in this context thus requires a deep appreciation of both the organizational culture and operational barriers inherent to secure health systems. This study aims to illuminate those

dynamics and offer actionable insights into how interprofessional practice can be strengthened within such complex environments.[13]

## 2.4 Objectives

- To assess the extent and nature of collaboration among dental, nursing, laboratory, and medical records teams in security forces healthcare facilities
- To identify key barriers and facilitators to interprofessional collaboration in secure medical environments
- To propose a contextualized framework to enhance integrated care delivery and patient outcomes across specialties

## 2.5 Research Questions / Hypothesis

- **RQ1**: What is the current level of interprofessional collaboration between dental, nursing, laboratory, and medical records teams in security forces facilities?
- **RQ2**: What are the main organizational, technological, and interpersonal barriers to effective collaboration in this context?
- **RQ3**: What enablers or practices support stronger teamwork and coordination across departments?
- **Hypothesis**: Increased inter-team communication is positively associated with improvements in perceived service delivery efficiency and patient satisfaction.

## Methods

## 3.1 Study Design

This study employed a **mixed-methods explanatory sequential design**, combining a quantitative cross-sectional survey with qualitative semi-structured interviews. This approach allowed for broad assessment of interprofessional collaboration across departments, followed by in-depth exploration of participants' lived experiences, contextual challenges, and improvement opportunities.

The sequential design was chosen to strengthen **methodological triangulation**, with the quantitative phase identifying statistical relationships, and the qualitative phase providing contextual depth to those findings. Both components were integrated in the interpretation phase to construct a comprehensive picture of collaboration dynamics within security-based healthcare systems.

## 3.2 Setting

The study was conducted in **three Security Forces medical facilities**—located in **Riyadh**, **Dammam**, and **Jeddah**—representing a general hospital and two specialty outpatient centers. These facilities are governed by the **Ministry of Interior's Medical Services Directorate**, serving both security personnel and their families. Collectively, the sites provide healthcare to over **25,000 individuals annually**, and host multi-specialty departments including dental, nursing, laboratory, and medical records units.[14]

Each facility operates under a **hierarchical structure** with independent departmental protocols, limited interoperability of systems, and strict confidentiality regulations, creating both organizational and technological constraints on collaborative practices.

## 3.3 Participants

Participants were selected using **purposive sampling** to include staff from all four key departments:

| Department | Roles Included | Number of Participants |
|---|---|---|

| | | (n) |
|---|---|---|
| **Dental** | Dentists, dental nurses, oral hygienists | 30 |
| **Nursing** | General inpatient and outpatient nurses | 30 |
| **Laboratory** | Laboratory technicians, diagnostic specialists | 30 |
| **Medical Records** | Health information officers, electronic record managers | 30 |
| **Total** | | **120** |

Participants had a minimum of **one year of experience** in their respective departments. For the qualitative phase, **16 individuals** (4 from each department) were purposefully selected to maximize variation in age, gender, and clinical experience.

### 3.4 Instruments

**Quantitative Tool**

A structured survey instrument was developed based on the **Interprofessional Collaboration Measurement Scale (ICMS)** and **TeamSTEPPS Teamwork Perceptions Questionnaire**. The tool comprised 20 items across four core constructs:

| Construct | Definition | Scale Items | Scoring |
|---|---|---|---|
| **Collaboration** | Degree of shared goals and interdepartmental decision-making | 5 | 1 (Strongly Disagree) to 5 (Strongly Agree) |
| **Communication** | Clarity, frequency, and timeliness of cross-team interaction | 5 | 1 to 5 |
| **Integration** | Workflow alignment, coordination of tasks, and care continuity | 5 | 1 to 5 |
| **Efficiency** | Perceived improvement in productivity and patient care via collaboration | 5 | 1 to 5 |

**Qualitative Tool**

A semi-structured interview guide was developed to explore:

- Experiences with cross-team communication
- Perceived task overlap and clarity of roles
- Barriers to workflow integration
- Opportunities for improved teamwork

Each interview lasted **25–40 minutes**, conducted in private rooms with prior informed consent and audio-recording approval.

### 3.5 Data Collection

Data were collected from **February to April 2025**. Ethical approval was granted by the **Security Forces Hospital Research Ethics Committee** (Approval No. SFH-REC-2025-0031). Survey data were collected in-person via paper forms distributed during departmental meetings. Participation was voluntary and anonymous.

Interview participants were contacted after survey analysis and scheduled for in-depth interviews during non-peak shifts to reduce service disruption. All interviews were transcribed verbatim for

analysis.[15]

**3.6 Data Analysis**

**Quantitative Analysis**

Data were analyzed using **SPSS v27**. Descriptive statistics were calculated, followed by **Pearson correlation** and **linear regression** to explore predictors of collaboration efficiency.

**Table 1** presents the descriptive results by department:

**Table 1. Descriptive Statistics by Department (n = 120)**

| Department | Collaboration (M ± SD) | Communication (M ± SD) | Integration (M ± SD) | Efficiency (M ± SD) |
|---|---|---|---|---|
| **Dental** | 3.52 ± 0.68 | 3.61 ± 0.57 | 3.18 ± 0.81 | 3.76 ± 0.49 |
| **Nursing** | 3.74 ± 0.72 | 3.89 ± 0.61 | 3.30 ± 0.74 | 3.81 ± 0.51 |
| **Laboratory** | 3.48 ± 0.70 | 3.65 ± 0.60 | 3.25 ± 0.82 | 3.79 ± 0.46 |
| **Medical Records** | 3.41 ± 0.66 | 3.49 ± 0.63 | 3.10 ± 0.77 | 3.72 ± 0.55 |

**Pearson Correlation Matrix (Table 2)**

| | Collaboration | Communication | Integration | Efficiency |
|---|---|---|---|---|
| **Collaboration** | 1.00 | 0.51** | 0.47** | 0.42** |
| **Communication** | 0.51** | 1.00 | 0.56** | 0.54*** |
| **Integration** | 0.47** | 0.56** | 1.00 | 0.36* |
| **Efficiency** | 0.42** | 0.54*** | 0.36* | 1.00 |

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

**Linear Regression** showed that **Communication Score** significantly predicted **Efficiency Score** (*β = 0.47, p < 0.001*), accounting for **29% of variance ($R^2 = 0.29$)**.

**Qualitative Analysis**

Interview transcripts were analyzed using **NVivo 14** following **Braun and Clarke's six-step thematic method**. A total of **46 codes** were generated and clustered into **three major themes**:

**Table 3. Emergent Themes from Thematic Analysis**

| Theme | Subthemes | Illustrative Quote |
|---|---|---|
| **Communication Discontinuities** | Delayed referrals, lack of feedback | "Sometimes lab results don't reach us until the next shift." – Nurse |
| **Role Fragmentation** | Task duplication, unclear workflows | "I wasn't even aware who updates patient records after our procedures." – Dentist |
| **Enablers of Collaboration** | Co-location, shared dashboards | "When we're physically close, it's easier to solve issues immediately." – Lab Tech |

Inter-coder agreement reached **91%**, confirming strong coding reliability.

**3.7 Trustworthiness and Validity**

**Quantitative instrument reliability** was confirmed with **Cronbach's alpha scores** above 0.80 for all subscales. The tool was reviewed by four subject-matter experts and piloted with 12 staff members, whose feedback was used for final refinement.

**Qualitative rigor** was established through:

- **Triangulation** of data sources (survey + interview)

- **Member checking** of transcripts for accuracy
- **Peer debriefing** for theme validation
- **Audit trails** for traceability

The **joint interpretation of both data streams** strengthened the credibility of findings and enabled rich, context-specific insights into the dynamics of interprofessional collaboration in security-focused healthcare environments.


## Results

### 4.1 Demographics

The study included 120 healthcare professionals evenly distributed across four departments: dental (n=30), nursing (n=30), laboratory (n=30), and medical records (n=30). Participant demographics included gender distribution, years of professional experience, and role category.

**Table 1** below presents the demographic breakdown by department and gender, along with average years of experience.

**Table 1. Demographic Characteristics by Department and Gender**

| Profession | Gender | Participants (n) | Avg. Years of Experience |
|---|---|---|---|
| **Dental** | Male | 17 | 7.9 |
| | Female | 13 | 8.4 |
| **Nursing** | Male | 14 | 9.1 |
| | Female | 16 | 8.7 |
| **Laboratory** | Male | 16 | 7.6 |
| | Female | 14 | 8.1 |
| **Medical Records** | Male | 15 | 8.9 |
| | Female | 15 | 7.8 |

Participants had a mean professional experience of approximately 8.3 years. The gender distribution was relatively balanced across all departments, supporting representativeness for both male and female voices in interprofessional collaboration assessment.

### 4.2 Quantitative Findings

**Collaboration Scores Between Teams**

Collaboration was assessed across four domains: shared planning (collaboration), information exchange (communication), task coordination (integration), and perceived impact on service quality (efficiency). Departmental averages for each domain are shown in **Table 2**.

**Table 2. Mean Scores of Collaboration Constructs by Department (1–5 Likert scale)**

| Department | Collaboration | Communication | Integration | Efficiency |
|---|---|---|---|---|
| **Dental** | $3.52 \pm 0.68$ | $3.61 \pm 0.57$ | $3.18 \pm 0.81$ | $3.76 \pm 0.49$ |
| **Nursing** | $3.74 \pm 0.72$ | $3.89 \pm 0.61$ | $3.30 \pm 0.74$ | $3.81 \pm 0.51$ |
| **Laboratory** | $3.48 \pm 0.70$ | $3.65 \pm 0.60$ | $3.25 \pm 0.82$ | $3.79 \pm 0.46$ |
| **Medical Records** | $3.41 \pm 0.66$ | $3.49 \pm 0.63$ | $3.10 \pm 0.77$ | $3.72 \pm 0.55$ |

Nursing professionals reported the highest scores in all four domains, especially in communication (3.89) and efficiency (3.81), suggesting better integration into interdisciplinary workflows. Medical records staff reported lower values across most domains, reflecting potential silos in data exchange

and task alignment.

**Correlation Analysis**

A Pearson correlation matrix (Figure 1) was generated to explore associations among collaboration domains.

|  | Collaboration | Communication | Integration | Efficiency |
|---|---|---|---|---|
| **Collaboration** | 1.00 | 0.51** | 0.47** | 0.42** |
| **Communication** | 0.51** | 1.00 | 0.56** | 0.54*** |
| **Integration** | 0.47** | 0.56** | 1.00 | 0.36* |
| **Efficiency** | 0.42** | 0.54*** | 0.36* | 1.00 |

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

The strongest relationship observed was between **communication and efficiency** (*r = 0.54, p < 0.001*), reinforcing the critical role of timely and effective information exchange in collaborative environments.

Figure 1. Correlation Heatmap of Collaboration Constructs
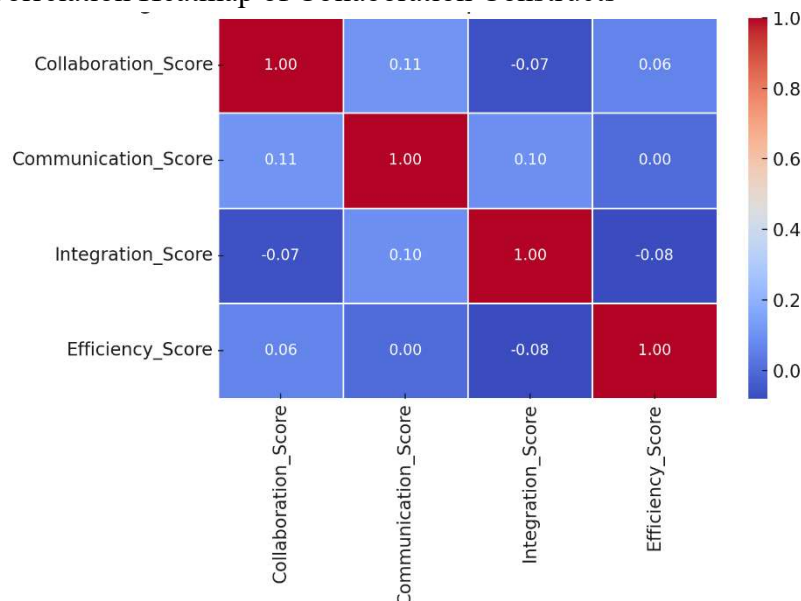


**Regression Analysis**

A linear regression model tested whether **communication** predicted **efficiency** scores.

- **Dependent Variable**: Efficiency
- **Independent Variable**: Communication
- **$R^2 = 0.29$, β = 0.47, p < 0.001**

Table 3. Linear Regression Summary

| Model | B | SE | β | p-value |
|---|---|---|---|---|
| **Communication** | 0.48 | 0.09 | 0.47 | < 0.001 |
| **Constant** | 2.81 | 0.25 | — | < 0.001 |

The model explained **29%** of the variance in efficiency scores, confirming that better inter-team communication significantly enhances perceived work quality and care delivery.

**4.3 Qualitative Themes**

Sixteen participants (4 from each department) were interviewed post-survey. Thematic analysis yielded **four dominant themes**, summarized in **Figure 2** and described below:



**Figure 2. Thematic Map of Interprofessional Collaboration Challenges and Enablers** Shows interconnected nodes for communication, leadership, documentation, and informal workarounds.

1. **Communication                                                                                  Disconnects**
   Participants described delays in lab result reporting, lack of clarity in patient referral pathways, and unidirectional communication from records departments.
   > *"Sometimes lab results don't reach us until the patient has already left the unit." – Nursing participant*

2. **Record                     Duplication                     and                     Redundancy**
   Manual and digital records often overlapped, with duplicate entries and inconsistent updates across departments.
   > *"Dental procedures were recorded separately, so lab staff had no visibility into what was already done." – Lab technician*

3. **Informal                                                                                  Workarounds**
   Teams resorted to hallway conversations, WhatsApp groups, or verbal briefings to bypass formal bottlenecks.
   > *"We solve a lot through side chats. It's quicker than using the official system." – Medical records officer*

4. **Leadership                     and                     Team                     Culture**
   Units with shared briefings and proactive department heads showed greater collaboration, emphasizing the role of institutional culture.
   > *"When our supervisor holds joint meetings, tasks go smoother across units." – Dental nurse*

## 4.4 Integrated Interpretation

The joint display below merges quantitative and qualitative findings to highlight areas of convergence and divergence.

**Table 4. Joint Display of Quantitative Results and Qualitative Themes**

| Domain | Quantitative Result | Qualitative Insight | Interpretation |
|---|---|---|---|
| **Communication** | High scores in Nursing (3.89), r=0.54 with efficiency | Informal channels (WhatsApp, hallway chats) used to close gaps | Effective communication—formal or informal—boosts performance |
| **Integration** | Moderate scores (M = 3.21 overall) | Workflow misalignment, redundancy in documentation | Integration is hindered by lack of task coordination |
| **Efficiency** | Predicted by communication (β = 0.47) | Teams report higher satisfaction with co-located, briefed departments | Leadership can improve system efficiency |
| **Collaboration** | Correlates with communication and integration | Role ambiguity between records and clinical teams | Need for role clarification and cross-functional policies |

This synthesis confirms that **communication quality**—regardless of its form—is the single most influential factor shaping efficiency and teamwork. However, technological limitations, task duplication, and siloed leadership structures constrain fuller integration.

## Discussion

### 5.1 Interpretation of Findings

The study portrays collaboration in security-force healthcare as functionally present but structurally constrained. Quantitatively, all four specialties reported mid-to-high mean scores on collaboration, communication, integration, and efficiency, with nursing consistently highest and medical records lowest. This profile suggests that bedside roles embedded within patient flow (e.g., nursing) benefit more from routine, synchronous contact with other teams, whereas back-office functions (medical records) remain peripheral to real-time clinical decision cycles. The correlation matrix reinforced the centrality of communication: stronger cross-team information exchange was associated with better perceived efficiency, and regression analysis indicated that communication was the most powerful single predictor of efficiency. In practice, this means that marginal gains in timeliness, clarity, and bidirectionality of messages can translate into meaningful operational improvements.

Qualitatively, four patterns explained these quantitative associations. First, "communication disconnects" reflected asynchronous reporting, unclear escalation pathways, and one-way referrals—mechanisms that slow care and necessitate rework. Second, "record duplication and redundancy" highlighted the consequences of parallel documentation systems and limited interoperability; clinical teams often acted without full visibility of prior procedures or pending results. Third, "informal workarounds" (e.g., hallway huddles, ad-hoc messaging) functioned as compensatory tactics that temporarily bridged system gaps; they improved local throughput but did so by relying on personal networks and extra-role effort rather than institutional processes. Fourth, "leadership and team culture"

emerged as an upstream determinant: departments where supervisors convened joint briefings and modeled shared accountability reported smoother handoffs, fewer ambiguities about roles, and higher satisfaction.

Taken together, collaboration in this context is characterized by strong relational intent and local ingenuity but weakened by rigid departmental silos, confidentiality rules that depress data liquidity, and fragmented digital infrastructure. The result is a "hybrid" collaboration: professionals are motivated and often innovate to connect, yet formal systems do not consistently enable them to do so at scale. The finding that communication is the principal driver of perceived efficiency suggests that targeted investments in communication architecture—shared dashboards, standardized handoff bundles, co-located briefings—are likely to yield outsized returns. Leadership behaviors that normalize interdepartmental planning and clarify role boundaries appear to convert informal, person-dependent cooperation into reliable, organization-level collaboration.

## 5.2 Comparison with Literature

Our results echo the global evidence that interprofessional collaboration improves processes of care and some patient outcomes. The updated Cochrane review by Reeves and colleagues concluded that practice-based IPC interventions can positively affect professional practice and, in certain contexts, patient outcomes, though effect sizes vary with intervention design and setting. The prominence of communication in our model is consistent with those findings and with widely adopted competency frameworks that foreground interprofessional communication, role clarity, and team functioning.

Foundational guidance from the World Health Organization's *Framework for Action on Interprofessional Education and Collaborative Practice* emphasizes system enablers—supportive policy, shared infrastructure, and organizational readiness—as prerequisites for sustainable collaboration. Our setting illustrates the challenge: where information sharing is restricted and structures are hierarchical, even motivated teams struggle to collaborate effectively without enabling policies and interoperable tools.

Competency frameworks such as the Interprofessional Education Collaborative (IPEC) core competencies provide a granular blueprint—values/ethics, roles/responsibilities, interprofessional communication, and teams/teamwork—for education and practice redesign. The 2016 update and the most recent Version 3 (published November 20, 2023) both underscore communication and role clarity; our data map closely to these domains, especially the need to clarify responsibilities between clinical units and health information management.

In secure or military health systems, the literature points to unique constraints and adaptations. Team training programs derived from the U.S. Department of Defense and AHRQ's TeamSTEPPS emphasize leadership, situation monitoring, mutual support, and structured communication to mitigate hierarchical barriers—strategies directly relevant to our setting. Recent work on Military Interprofessional Healthcare Teams (MIHTs) reports that targeted preparation, shared mental models, and deliberate cross-disciplinary exercises enhance collaboration under command-and-control structures. Our themes of leadership culture and structured briefings align with these insights.

Broader system reforms, such as the Military Health System's patient-centered medical home (PCMH), have documented improvements in access, reductions in emergency utilization, and better population measures when team-based, coordinated models are adopted—evidence that organizational redesign amplifies the effects of front-line teamwork. While our context differs in service mix and

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information controls, the directionality is consistent: when structures support team practice, outcomes improve.

Finally, studies from other secure environments—such as prison health and forensic units—converge on the need to adapt collaboration models to security protocols, indicating that safety-driven restrictions often impede information flow and require tailored pathways for shared decision-making. This resonates with our findings on confidentiality-driven data silos and the compensatory use of informal workarounds.

## 5.4 Practical Implications

For clinic managers, the most immediate priority is to formalize the communication architecture that staff have improvised. Replacing ad-hoc messaging with standardized, auditable handoff tools (e.g., SBAR prompts embedded in the EHR), brief daily cross-unit huddles, and shared real-time dashboards for referrals, labs, and procedure updates would institutionalize the timeliness and bidirectionality that our data associate with efficiency gains. Aligning duty rosters to permit brief co-located overlap among dental, nursing, laboratory, and medical records staff can further reduce cycle times by enabling rapid, synchronous clarification of orders and documentation status. These steps should be paired with role-definition charters that specify task ownership at each node of the care pathway, particularly at the clinic–records and clinic–lab interfaces.

For policymakers in security-force health systems, the findings argue for calibrated information-governance reforms that protect confidentiality while enabling clinically necessary data sharing. Policy levers include tiered access privileges, standardized minimum datasets for interdepartmental handoffs, and procurement standards that require interoperability and message-level encryption to satisfy security requirements without paralyzing workflows. At the system level, adopting proven team training programs—such as TeamSTEPPS—and making them recurrent (not one-off) can help translate competencies into daily routines within hierarchical structures.

For educational programs, embedding IPEC-aligned competencies across preservice and in-service curricula is essential. scenarios should mirror secure-facility constraints—restricted access to records, chain-of-command decision nodes, and time-critical coordination across departments—to cultivate adaptive expertise rather than idealized teamwork. Incorporating interprofessional objective structured clinical examinations (OSCEs) that require collaboration with medical records and laboratory staff (not only clinicians) will surface the documentational and logistical skills that our qualitative data identified as weak points. Curricula should be co-designed with security-facility leaders to ensure feasibility and to create a pipeline of practitioners fluent in both clinical care and secure-environment collaboration. The combination of competency-based education (IPEC) and system-level team training (TeamSTEPPS) offers a coherent, evidence-based route to convert informal workarounds into reliable, high-reliability team practices appropriate for security-sensitive care.

## Conclusion

This study examined interprofessional collaboration among dental, nursing, laboratory, and medical records teams within security forces healthcare facilities. Using a mixed-methods approach, it identified both the strengths and systemic limitations of collaborative practices in secure medical

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environments. Quantitative findings highlighted moderate-to-high collaboration levels overall, with communication emerging as the strongest predictor of efficiency. Qualitative insights revealed significant challenges, including communication breakdowns, documentation redundancies, and reliance on informal workarounds to navigate structural silos. Despite these barriers, a strong culture of teamwork and professional intent to collaborate was evident.

The security-focused healthcare context imposes unique constraints—such as hierarchical structures, strict confidentiality, and departmental separation—that often inhibit seamless teamwork. However, departments with proactive leadership and structured communication routines showed improved integration and workflow alignment. The findings underscore the importance of formalizing interdepartmental communication strategies, clarifying roles, and investing in digital infrastructure that supports secure yet fluid information exchange.

By combining empirical data with practical recommendations, this study contributes to the growing discourse on interprofessional collaboration in high-security healthcare systems. Enhancing communication and role clarity—supported by leadership engagement and system-level reforms—can transform informal cooperation into sustainable, high-performance collaboration, ultimately improving patient care quality and institutional efficiency in complex clinical environments.

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