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THE INFECTIOUS DISEASES SPECIALIST IN THE HOSPITAL: AN EXPERT SERVING QUALITY OF CARE AND PATIENT AND COMMUNITY SAFETY

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ABSTRACT

The infectious disease (ID) specialist is a clinician who manages patients with bacterial, viral, fungal or parasitic infections, particularly the most complex, difficult-to-treat or emerging ones. Although most ID specialists consider their added value self-evident, this view is not universally shared, and the supporting evidence deserves wider recognition. This review summarizes the literature on the relevance and impact of the specialty in the hospital setting. Published studies suggest that ID consultation improves the diagnostic work-up, the appropriateness of antimicrobial therapy and the management of community-acquired, nosocomial and complex infections, with the timing of the intervention and continuous involvement in patient care appearing decisive. We also describe the competencies that define the specialty (transversality, organizational capacity and the role of anti-infective referent) and the recent developments reshaping its practice, including infection prevention and control, telemedicine, rapid diagnostics, nanomaterials and artificial intelligence. This synthesis is of particular relevance in Morocco, where the specialty has been established in the civilian sector for about two decades but remains nascent within the military health service.

KEYWORDS: Infectious diseases; healthcare costs; antimicrobial resistance; healthcare-associated infections.

INTRODUCTION

Infectious diseases is the clinical medical discipline dedicated to the study of infectious agents, the mechanisms by which infections are transmitted, and the means of preventing and treating them, at both the individual and the collective level. It draws on skills in clinical microbiology, anti-infective pharmacology, epidemiology and health surveillance. It currently faces multiple challenges: new infections in immunocompromised patients, healthcare-associated infections, "difficult-to-treat" infections (complex bone and joint infections, multidrug-resistant bacteria), HIV, emerging infections — the COVID-19 pandemic being a recent illustration — and tropical or imported diseases among migrants, repatriated persons and travelers.

In Morocco, infectious diseases has existed as a full medical specialty for about twenty years, particularly at the University Hospital of Casablanca, where ID specialists have played a major role in patient care, infection control and antibiotic stewardship. The discipline is more recent at the University Hospital of Rabat and, even more so, within the military health service, where the first ID resident was recruited only in 2017. This recent development was accompanied, on 7 March 2016, by the inauguration, at the Mohammed V Military Teaching Hospital in Rabat, of the Center for Virology, Infectious and Tropical Diseases — a national reference facility dedicated to the diagnosis and treatment of viral, bacterial, parasitic and fungal infections, the management of highly contagious diseases, the surveillance of emerging and re-emerging pathogens, and continuing education and research in the field.

It is within this context of a still-young implantation in Moroccan military facilities that the present work finds its relevance; it aims to report the literature on the value and importance of hospital-based infectious diseases practice.

1. History and recognition of the discipline

The history of infectious diseases is inseparable from that of nosocomial infection. Until the mid-18th century, life expectancy in Europe — close to that of prehistoric times — hardly exceeded 25 years, with bacterial and viral infections being the leading cause of mortality, even setting aside great famines and wars. Long attributed to mysterious causes, or even deemed inevitable, "hospital rot" gradually gave way to the concept of nosocomial infection thanks to the work of pioneers such as Ignaz Semmelweis and Florence Nightingale on hospital hygiene.

In the 19th century, Robert Koch identified the agents responsible for anthrax, tuberculosis and cholera, while Louis Pasteur developed the first vaccines and demonstrated the role of germs in infectious diseases — work that prompted Joseph Lister to introduce surgical asepsis. The discovery of antibiotics then radically transformed the management of infections; but from the 1950s-1960s onwards, the rise of excessive prescribing and self-medication brought a growing proportion of resistant bacteria, which would become the driving force behind the organizational structuring of the fight against nosocomial infection.

Although infectious diseases became a collective concern as early as the 19th century, it was not until the 1970s that they were recognized as a full medical specialty, in connection with the discovery of new vaccines and new diseases. In France, this academic recognition dates from 1984, under the title "Infectious and Tropical Diseases" (*Maladies Infectieuses et Tropicales*); the term "infectiology" (*infectiologie*), now established through usage, better reflects current practice, which is centered on the most complex bacterial, viral, fungal or parasitic infections and on emerging diseases.

2. Added value of the infectious disease physician in the hospital

2.1 Overall clinical and economic impact

In this era of responsible management of healthcare expenditure, specialists in all disciplines are under growing pressure to demonstrate their value to patients, hospitals and third-party payers; some authors have even suggested that specialists contribute excessively to the overall cost of care without sufficient quality to justify it.[1,2] It is therefore imperative that ID physicians be able to demonstrate their value to patients, families, physicians, hospital administrators and regulators.[3]

The available data are, however, heterogeneous. Classen *et al.* (1997), in a cohort of 496 patients at a tertiary care center in Utah, showed that patients who received an ID consultation had longer hospital stays and higher antibiotic costs than matched controls — except when the consultation took place in the final third of the stay, when length of stay and costs were instead lower, which underlines the importance of the timing of the intervention rather than its principle.[2] The rate of ID consultation also varies widely between institutions: from 2.1 to 4.1% in community hospitals versus 2.2 to 6% in tertiary care hospitals.[4,5] In an Israeli series of 14,005 consultations over five years, 58% concerned therapy, 13% diagnosis and 24% both, with a change in treatment recommended in 46% of cases[5]; another team found an erroneous diagnosis by the admitting physician in 7% of consultations and treatment judged suboptimal in 41% of cases before the ID specialist's intervention.[6] Telephone or "curbside" consultations, unpaid but frequent in daily practice, illustrate the informal availability that the ID physician offers to colleagues.[7-10]

Several disease-specific studies point in the same direction: a better bone recovery rate in osteomyelitis[11], shorter lengths of stay, fewer readmissions and greater patient satisfaction among patients managed by ID physicians rather than by internists[12], and better therapeutic appropriateness in urinary tract infections[13], *Staphylococcus aureus* endocarditis[14] and HIV infection.[15] Finally, numerous studies converge to show the impact of ID physicians on the reduction of expenditure related to antibiotic use, without deterioration of clinical outcomes, in the management of nosocomial or post-traumatic infections.[5,16,17]

2.2 Management of community-acquired infections

The ID physician must be able to prevent, diagnose and manage community-acquired infections, particularly in their severe forms — endocarditis, meningitis, bone and joint infections, chronic infections (HIV, hepatitis B and C) — as well as infections associated with immunosuppression (transplant recipients, neutropenic or sickle cell patients).

Several studies have shown that these consultations improved the management of bacteremia[18-21], antibiotic use, therapeutic appropriateness and the cost of care.[22,23] Borer *et al.* (2004) compared, in 402 febrile adults consecutively admitted to two internal medicine departments of the same hospital, the care provided by ID specialists with that provided by other specialties: patients followed by ID specialists more often received an appropriate diagnosis on admission and at discharge, and the five minimum recommended diagnostic tests for a febrile syndrome were performed in 82% of cases versus 39% in the other department ($p < 0.001$). Antibiotic therapy was also more often appropriate (55.5% versus 43%, $p = 0.012$), with no associated increase in drug costs.[24] These results are consistent with the finding that up to 50% of hospital antimicrobial use may be inappropriate[25,26], and that controlling

antibiotic consumption therefore remains a difficult goal to achieve without the direct and continuous involvement of the ID physician in patient care, rather than a simple one-off consultation.[24,27]

2.3 Surveillance and prevention of healthcare-associated infections

Routine microbiological surveillance, antibiotic stewardship protocols and ID consultation contribute to early diagnosis and appropriate antibiotic treatment of infections, particularly nosocomial ones. A four-year prospective cohort study conducted in an intensive care unit by Raineri *et al.* thus showed that a systematic ID consultation program improved the appropriateness of antimicrobial prescribing and adherence to local guidelines, with appropriate antibiotic therapy in turn being associated with reduced ICU mortality.[28]

A US study conducted in a center that had experienced a significant increase in infections after mechanical circulatory support (MCS) instituted a systematic ID consultation before device implantation, comprising preoperative assessment of infectious risk, selection of the optimal timing of perioperative antibiotic prophylaxis, and an outpatient follow-up protocol providing for a consultation within 48 hours of any local sign of infection. This policy resulted in a trend toward a reduction in the incidence of MCS infections, from 11.2% over the 2008-2009 period to 7.3% over the 2010-2012 period, with comparable implantation volume.[29] A Japanese study likewise showed that an infectious diseases service, even a part-time one, improved patient and antimicrobial management: the number of days of treatment with meropenem, cefepime and anti-*Pseudomonas* agents decreased significantly after the introduction of weekly consultations, while that of piperacillin-tazobactam increased.[30]

2.4 Management of complex infections

"Complex infections" are those whose management is made difficult either by the physicochemical conditions of the infected site (bone and joint infections, foreign-body infections), by the characteristics of the pathogen (polymicrobial infections, multidrug-resistant bacteria, rare agents), or by an immunosuppressed context.

A multicenter Italian study of 311 patients (prosthetic joint infections, osteomyelitis, spondylodiscitis, infections of fixation hardware) showed that after consultation with an ID specialist, the use of microbiological tests, imaging and biological markers of inflammation increased significantly, while inadequacies in treatment duration, dosage or administration schedule decreased.[31] Similarly, an Indian study in cancer patients showed that a systematic ID consultation within 24 hours of a positive blood culture for a Gram-negative bacterium reduced the prevalence of meropenem-resistant organisms, underlining the value of dedicated expertise in limiting the spread of bacterial resistance in the hospital setting.[32]

3. Competencies and fields of responsibility of the infectious disease physician

Beyond his or her clinical role, the ID physician draws on a set of competencies that are both common to all medical specialties and specific to the discipline.[33]

Common competencies include basic scientific knowledge (physiology, bacteriology, virology, parasitology, epidemiology, hygiene); clinical reasoning and therapeutic decision-making — clinical and paraclinical synthesis, individual and collegial decisions (staff meetings, multidisciplinary team meetings), adaptation of strategy to new information, emergency management; and communication skills: empathetic listening, clear and tailored information, breaking bad news, and respect for privacy and decision-making autonomy. These are complemented by communication with care teams (information transfer, concerted decisions, medical record traceability), care management and organization (team leadership, interprofessional cooperation, awareness of one's limits, updating of protocols), evaluation and continuous improvement of practice (self-assessment, critical literature review, teaching, continuing professional development), and knowledge of the institutional environment (hospital governance, human resources management, costs of procedures).

Competencies specific to infectious diseases revolve around three axes. First, **transversality**: joint work with other organ specialties for specific diagnostic or therapeutic procedures, cooperation with microbiologists and infection control specialists, coordination of complex infectious situations, collaboration with intensivists in severe cases, and availability — including by telephone — for diagnostic and therapeutic advice to general practitioners or specialist colleagues. Second, **organizational capacity**: knowledge of individual and collective preventive measures for communicable diseases, mastery of the indications, contraindications and modalities of curative and prophylactic treatments, organization of isolation techniques and of microbiological sampling and transport, and participation in crisis units during infectious emergencies. Third, the role of **anti-infective referent**: the ID physician leads therapeutic advice networks, contributes to the sparing of anti-infectives and to limiting the emergence of resistance, disseminates the recommendations issued by the competent bodies (Ministry of Health, learned societies) and promotes the policy of appropriate anti-infective use at the bedside.

4. Recent advances and perspectives

Healthcare-associated infections remain a major issue: an Iranian meta-analysis reports that approximately 8% of patients hospitalized in military settings acquire an infection during their stay[34], while the World Health Organization, in its first global report on infection prevention and control, stresses that well-conducted prevention and control programs can reduce nosocomial

infections by 70%[35] — the COVID-19 pandemic having, moreover, revealed major gaps in this area in most countries.

Technological innovation is transforming the practice of infectious diseases. The WHO has thus compiled a compendium of 24 innovative health technologies deployable with limited resources, ranging from simple colorimetric reagents to portable respiratory monitoring devices.[36] Telemedicine, whose growth accelerated with the COVID-19 crisis, has a natural application in infectious diseases for the follow-up of chronic conditions, of HIV-positive patients, or of post-operative courses that do not require in-depth clinical examination — a teleconsultation at day 7 or day 14, for example, which can be supplemented by an in-person consultation if there is doubt about progress.[37] On the diagnostic side, techniques such as the line immunoassay (LIA) or the RIBA test, which use synthetic or recombinant antigens, allow a more precise, more sensitive and faster diagnosis of infectious diseases.[38]

These developments take place in a context in which medical practice must continually adapt to countless parameters: globalization, migration, climate change, artificial intelligence and technological novelties.[39] Several innovative treatment avenues are being explored: nutritional modulation of the immune response, through intake of vitamins D and C or trace elements (magnesium, zinc, selenium)[40]; nanomaterials, whose bactericidal properties offer prospects for combating resistant bacteria, although the development of a nanomaterial-based drug remains a long-term goal[41]; and artificial intelligence, of which machine learning is already, in clinical practice, the most widespread application in infectious diseases among health disciplines (15.6% of recorded uses), mainly for prediction, diagnosis and surveillance purposes.[42]

CONCLUSION

The infectious disease physician is a clinician who manages patients with bacterial, viral, fungal or parasitic infections, particularly the most complex ones and emerging infectious diseases. His or her expertise makes it possible to establish a relevant diagnostic and therapeutic indication, to choose anti-infectives according to multiple criteria, and to monitor their efficacy and tolerability. The ID physician plays a central role in the recognition, alerting and individual and collective prevention of the spread of communicable diseases, and contributes, through field clinical experience, to the assessment of the ecological and economic impact of infectious diseases on the hospital and the community.

Through this synthesis, we hope to have helped highlight the importance of the infectious disease physician in the modern hospital landscape — a finding that takes on particular significance in a context, such as that of the Moroccan military health service, where the discipline is still being structured.

REFERENCES

1. Greenfield S, Nelson EC, Zubkoff M, et al. Variations in resource utilization among medical specialties and systems of care: results from the medical outcomes study. JAMA, 1992; 267: 1624-1630.
2. Classen DC, Burke JP, Wenzel RP. Infectious diseases consultation: impact on outcomes for hospitalized patients and results of preliminary study. Clin Infect Dis, 1997; 24: 468-470.
3. Petrak MR, et al. The value of an infectious diseases specialist. Clin Infect Dis, 2003; 36: 1013-1017.
4. Sexton DJ. Rates of infectious disease consultation in hospitals of different size and types, 1986-87. Rev Infect Dis, 1991; 13: 527.
5. Yinnon AM. Wither infectious disease consultations? Analysis of 14,500 consultations from a 5-year period. Clin Infect Dis, 2001; 33: 1661-1667.
6. Wilkins EG, Hickey MM, Khoo S, et al. Northwick Park Infection Consultation Service. Part II. Contribution of the service to patient management: an analysis of results between September 1987 and July 1990. J Infect 1991; 23: 57-63.
7. Cotton ME. Telephone calls to an infectious disease fellow. Pediatrics, 1995; 95: 753-757.
8. Kleiman MB. The infectious disease consultant and the telephone consultations. Pediatr Infect Dis, 1986; 5: 51-53.
9. Manian F, McKinsey D. A prospective study of 2,092 "curbside" questions asked of two infectious disease consultants in private practice in the Midwest. Clin Infect Dis, 1996; 22: 303-307.
10. Raz R, Sobah S, Bisharat N. Current topics of curbside consultations on infectious disease. Infect Dis Clin Pract, 1999; 9: 292-294.
11. Lobati F, Herndon B, Bamberger D. Osteomyelitis: etiology, diagnosis, treatment and outcome in a public versus a private institution. Infection, 2001; 29: 93-96.
12. Eron LJ, Passos S. Early discharge of infected patients through appropriate antibiotic use. Arch Intern Med, 2001; 161: 61-65.
13. Elhanan G, Sarhat M, Raz R. Empiric antibiotic treatment and the misuse of culture results and antibiotic sensitivities in patients with community-acquired bacteremia due to urinary tract infection. J Infect, 1997; 35: 283-288.
14. Fowler VG Jr, Sanders LL, Sexton DJ, et al. Outcome of Staphylococcus aureus bacteremia according to compliance with recommendations of infectious diseases specialists: experience with 244 patients. Clin Infect Dis, 1998; 27: 478-486.
15. Kitahata MM, Koepsell TD, Deyo RA. Physician's experience with the acquired immunodeficiency syndrome as a factor in patients' survival. N Engl J Med, 1996; 334: 701-706.

16. Frank MO, Batteiger BE, Sorenson SJ, et al. Decrease in expenditures and selected nosocomial infections following implementation of an anti-microbial prescribing improvement program. Clin Perform Qual Health Care, 1997; 5: 180-188.
17. Fox BC, Imrey PB, Voights MB, Norwood S. Infectious disease consultation and microbiologic surveillance for intensive care unit trauma patients: a pilot study. Clin Infect Dis, 2001; 33: 1981-1989.
18. Byl B, Clevenbergh P, Jacobs F, et al. Impact of infectious diseases specialists and microbiological data on the appropriateness of antimicrobial therapy for bacteremia. Clin Infect Dis, 1999; 29: 60-66.
19. Cunney RJ, McNamara EB, Alansari N, Loo B, Smyth EG. The impact of blood culture reporting and clinical liaison on the empiric treatment of bacteremia. J Clin Pathol, 1997; 50: 1010-1012.
20. Fluckiger U, Zimmerli W, Sax H, Frei R, Widmer AF. Clinical impact of an infectious disease service on the management of bloodstream infection. Eur J Clin Microbiol Infect Dis, 2000; 19: 493-500.
21. Nathwani D, Davey P, France AJ, Phillips G, Orange G, Parratt D. Impact of an infection consultation service for bacteraemia on clinical management and use of resources. Q J Med, 1996; 89: 789-797.
22. Gomez J, Conde Cavero SJ, Hernandez Cardona JL, et al. The influence of the opinion of an infectious disease consultant on the appropriateness of antibiotic treatment in a general hospital. J Antimicrob Chemother, 1999; 38: 309-314.
23. Coleman RW, Rodondi LC, Kaubisch S, Granzella NB, O'Hanley PD. Cost effectiveness of prospective and continuous parenteral antibiotic control: experience at the Palo Alto Veterans Affair Medical Center from 1987 to 1989. Am J Med, 1987; 90: 439-444.
24. Borer A, Gilad J, Meydan N, Schlaeffer P, Riesenberg K, Schlaeffer F. Impact of regular attendance by infectious disease specialists on the management of hospitalised adults with community-acquired febrile syndromes. Clin Microbiol Infect, 2004; 10: 911-916.
25. Marr JJ, Moffet HL, Kunin CM. Guidelines for improving the use of antimicrobial agents in hospitals: a statement by the Infectious Disease Society of America. J Infect Dis, 1987; 157: 869-876.
26. Gould IM, Jappy B. Trends in hospital antibiotic prescribing after introduction of an antibiotic policy. J Antimicrob Chemother, 1996; 38: 895-904.
27. John JF, Fishman NO. Programmatic role of the infectious diseases physician in controlling antimicrobial costs in the hospital. Clin Infect Dis, 1997; 24: 471-485.
28. Raineri E, Pan A, Mondello P, Acquarolo A, Candiani A, Crema L. Role of the infectious diseases specialist consultant on the appropriateness of antimicrobial therapy prescription in an intensive care unit. Am J Infect Control, 2008; 36(4): 283-290.
29. Hadi A, Hellman Y, Gradus-Pizlo I, Malik A, Caccamo M, Wozniak T, Hashmi Z, Wang I, Pickrell J. Pre-emptive ID Specialist Consultation Reduces MCS Drive Line Infections. J Heart Lung Transplant, 2014; 33(4): S129.
30. Hadano Y, Suyama A, Hijikata T, Miura A, Fujii S, Suzuki Y, Tomoda Y, Awaya Y. The importance of infectious disease specialists consulting on a weekly basis in a Japanese tertiary care hospital: a retrospective observational study. Medicine, 2023; 102(1): e32628.
31. Esposito S, Russo E, De Simone G, Gioia R, Petta E, Leone S, Noviello S, Artioli S. Diagnostic and therapeutic appropriateness in bone and joint infections: results of a national survey. J Chemother, 2016; 28(3): 191-197.
32. Vithal A, Abhijna Y, Yergolkar V, Kaswala C, Tripathi P, Ganesan S, Rupesh VR, Sharafudheen TP. Effect of infectious diseases consultation on the prevalence of meropenem resistance in bloodstream infections caused by Gram-negative bacteria in cancer patients. CIDSCON 2023, Chennai, India.
33. Brouqui P, et al. Référentiel métier : compétences de l'infectiologue [Job profile: competencies of the infectious disease physician; in French]. CNU, CMIT, SPILF, SNMInf.
34. Janbakhsh A, Naghipour A, Mohseni Afshar Z, Balvandi M, Naghibifar Z. The prevalence of nosocomial infections in Imam Reza Hospital of Kermanshah, Iran, during 2019-2020. J Kermanshah Univ Med Sci, 2023; 27(3): e138126.
35. World Health Organization. WHO launches first ever global report on infection prevention and control [Internet; French version]. Geneva: WHO; 2022 [cited 2023 Nov 11]. Available from: https://www.who.int/fr/news/item/06-05-2022-who-launches-first-ever-global-report-on-infection-prevention-and-control
36. World Health Organization. WHO releases new compendium of innovative health technologies for COVID-19 and other priority diseases [Internet; French version]. Geneva: WHO; 2021 [cited 2023 Nov 11]. Available from: https://www.who.int/fr/news/item/31-08-2021-who-releases-new-compendium-of-innovative-health-technologies-for-covid-19-and-other-priority-diseases
37. Société de Pathologie Infectieuse de Langue Française. Télé-médecine : soins et expertises à distance [Telemedicine: remote care and expertise; in French] [Internet]. Paris: SPILF; 2023 [cited 2023 Nov 11]. Available from: https://www.infectiologie.com/fr/tele-medecine-soins-et-expertises-a-distance.html
38. Gazette de l'infectiologie : l'évolution technique au service du diagnostic des maladies infectieuses [Technical progress serving the diagnosis of infectious diseases; in French] [Internet].

Infectiologie.com [cited 2023 Nov 11]. Available from: https://www.infectiologie.com/fr/actualites/gazette-de-l-infectiologie-l-evolution-technique-au-service-du-diagnostic-des-maladies-infectieuses_-n.html

39. Handrick W, Tauchnitz C, Spencker F. [Current status and change in infectiology]. Z Gesamte Inn Med, 1992; 47: 391-393.
40. Ouedraogo L, Apeti S, Ouedraogo D. A new perspective on Covid-19 treatment: when a paradigm changes in infectiology become necessary against an emerging virus as the SARS-CoV-2. Preprints 2020, 2020090561.
41. Zou Y, Tao S, Li J, Wu M, Zhou X. Applications of nanomaterials as treatments and diagnostic biosensors in microbial infections. MedComm Biomater Appl, 2023; 2: e62.
42. Otmani N, Qarmiche N, Omari M, Bourkhime H, Tachfouti N, El Fakir S. Artificial intelligence and machine learning in healthcare: application and challenges. J Posit Sch Psychol, 2022; 6(8): 1847-1853.