A Cost-minimization analysis of dermatophyte test kit with tinea unguium under healthcare system in Japan

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1. Background

• Diagnosis for tinea unguium
  • Direct microscopic test
    • Strongly recommended by guideline of Japanese dermatological association
  • Clinical observation
    • Diagnostic accuracy is questionable
    • Misdiagnosis rate of clinical observation was more than 30% (Tsunemi et al., J. Dermatol, 42(2): 221-222, 2015)

• Treatment for tinea unguium
  • Oral Antifungal Agents
    • Terbinafine
    • Itraconazole
  • External Antifungal Agents
    • Efinaconazole

2. Dermatophyte Test Kit

• Extracorporeal Diagnostic Agents
  • Newly approved in Japan in 2016
  • High sensitivity and specificity comparable to direct microscopic test

3. Purpose and framework

• Purpose of this study
  • To reveal the impact of implementing the dermatophyte test kit on the budget of public healthcare system

• Framework
  • Cost minimization analysis
  • Target technology: dermatophyte test kit
  • Perspective: the public healthcare payer’s perspective

4. Method

1. Calculating the specificity by each diagnostic method
2. Estimating the number of false-positive cases of each diagnostic method
3. Developing treatment models of tinea unguium patients and estimating treatment costs
4. Conducting the cost-minimization analysis in case the clinical observation is replaced to the dermatophyte test kit
5. Applying the sensitivity analysis to consider uncertainty

5. Result

6. Discussion & Conclusion

• The result of Cost Minimization Analysis
  • Through significant decrease number of false-positive patients, the result of CMA indicate that dermatophyte test kit potentially reduce the medical cost by 1,111million Yen.
  • Sensitivity analysis supported similar result

• Conclusion
  • Dermatophyte test kit with tinea unguium may lead to a positive budget impact on the public healthcare system in Japan