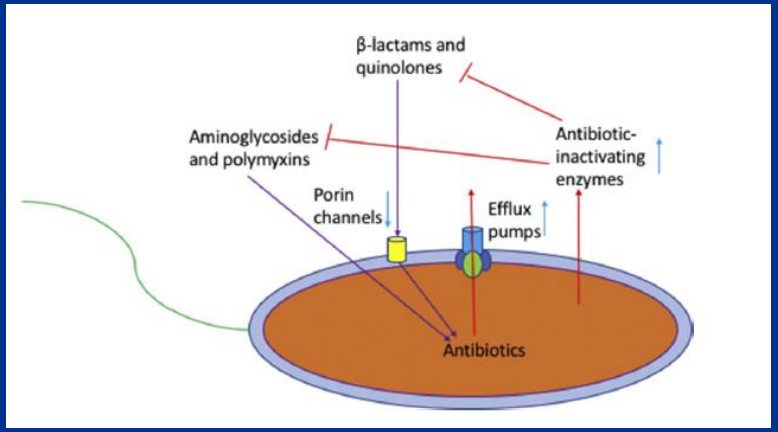
# Introduction

**Diabetic Foot Infections (DFI): pivotal event leading to lower extremity amputation**

***Pseudomonas* spp:**

- **Virulent pathogen, strong biofilm**
- **Frequent in nosocomial infections**
- **Resistant to standard antbiotics used as first – line therapy for DFI**
- **May become rapidly resistant during therapy**
- **"Recognizable": green colour, grape juice – like smell, skin maceration ?**





Prompers et al. Diabetologia 2008

Uckay et al. Diabetes, Obesity and Metabolism 2014

Pang et al. Biotechnology Advances 2019

| First author [Reference] | Country | Year | Types of wounds | No. of patients | Percentage of isolates from wound culture | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Staphylococci | Streptococci | Gram-positive | Gram-negative | *Ps. aeruginosa* | Anaerobes |
| Carvalho [109] | Brazil | 2003 | Infections | 141 | 20 | 4 | 29 | 59 | 7 | 12 |
| Candel [110] | Spain | 2003 | Infections | 27 | 49 | 15 | 78 | 22 | 1 | 2 |
| Anandi [111] | India | 2004 | Infections | 107 | 14 | — | — | — | — | 4 |
| Unachukwu [112] | Nigeria | 2005 | Gangrene | 60 | 56 | — | — | — | — | — |
| Senneville [113] | France | 2005 | Bone | 76 | 52 | 12 | — | 18 | 2 | 5 |
| Abdulrazak [114] | Kuwait | 2005 | Infections | 86 | 38 | 17 | 74 | 26 | 18 | 11 |
| Shankar [115] | India | 2005 | Infections | 77 | — | 3 | 42 | 58 | 30 | 6 |
| Yoga [116] | Malaysia | 2006 | Infections | 44 | 20 | — | — | — | 14 | — |
| Gadepalli [72] | India | 2006 | Ulcers | 80 | 20 | 0 | 33 | 51 | 10 | 15 |
| Sharma [117] | Nepal | 2006 | Ulcers | — | 38 | — | — | — | 18 | — |
| Őrmen [118] | Turkey | 2007 | Bone | 50 | — | — | 40 | 60 | — | — |
| Raja [119] | Malaysia | 2007 | Infections | 194 | 44 | 25 | 45 | 52 | 25 | — |
| Çetin [120] | Turkey | 2007 | Infections | 65 | 18 | 6 | 59 | 41 | 8 | 3 |
| Dowd [121] | USA | 2008 | Ulcers | 40 | 8 | 37 | — | — | 15 | 18 |
| Umadevi [122] | India | 2008 | Infections | 105 | 17 | 0 | 29 | 71 | 17 | 0 |
| Khoharo [123] | Pakistan | 2009 | Infections | 60 | 20 | 3 | 27 | 73 | 48 | 2 |
| Ramakant [35] | India | 2010 | Ulcers | 447 | 19 | 3 | 31 | 57 | 17 | 1 |
| Zubair [124] | India | 2010 | Infections | 60 | 31 | 0 | 38 | 62 | 11 | 0 |
| Őzer [43] | Turkey | 2010 | Infections | 78 | 17 | 7 | 38 | 56 | 19 | — |
| Mendes [125] | Portugal | 2011 | Infections | 49 | 84 | 4 | 85 | 19 | 1 | 14 |
| Hayat [126] | Pakistan | 2011 | Infections | 85 | 18 | 5 | 27 | 68 | 27 | 2 |
| Pappu [127] | India | 2011 | Infections | 104 | 21 | 4 | — | >67 | 23 | 0 |
| Malone [128] | Saudi-Arabia | 2011 | Toe bone | 34 | 33 | 9 | 57 | 29 | 9 | 0 |
| Aziz [129] | Singapore | 2011 | Infections | 100 | 40 | 21 | — | — | 26 | 30 |
| Dezfulian [138] | Iran | 2011 | Infections | 69 | 43 | 5 | 55 | 45 | 6 | 5 |
| Aamir [36] | Pakistan | 2011 | Wounds | 114 | 55 | 5 | — | — | 4 | — |
| Tiwari [130] | India | 2012 | Infections | 62 | — | — | 32 | 68 | — | — |
| Swarna [131] | India | 2012 | Infections | 62 | 30 | 0 | 44 | 56 | 20 | 0 |

# Study Purpose and Design

**To investigate the capacity of experienced clinical workers to predict *Pseudomonas* spp. involvement in infected foot ulcers based on typical clinical findings (green color, specific smell, skin maceration ?)**

**Prospective observational pilot study**

# Interim Results

**Growth of *Pseudomonas* in 13 cases (15.2%)**

- **7 bone samples (8.2%)**
- **4 mono – infections**
- **9 co - infections**

**Clinicians predicted *Pseudomonas:***

- **Correctly in 5 cases**
- **Wrongly in 13 cases**
- **Missed it in 8 cases**

| | Overall: | Surgeons: |
|---|---|---|
| Sensitivity | 0.38 | 0.50 |
| Specificity | 0.83 | 0.94 |
| Positive predictive value | 0.29 | 0.75 |
| Negative predictive value | 0.88 | 0.84 |

# Conclusion

**The predictive capacity for *Pseudomonas* spp. according to visual and olfactory characteristics in DFI was moderate even among experienced clinicians**

**Better specificity than sensitivity**

**Effect of awareness / training (restitution) over time, the role of the Gram-staining and performance of wound nurses need to be further elucidated**

**Microbiology is still necessary**