A Multicenter Prospective Registry to Standardize and Evaluate Personalized Bacteriophage Therapy in Difficult-to-Treat Infections

From PHAGEFORCE to EPHICACI: Scaling Personalized Phage Therapy Across Belgium

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BACKGROUND

Antimicrobial resistance (AMR) increasingly complicates the management of **musculoskeletal infections (MSI)**, where biofilm formation and implant-associated infections often necessitate prolonged antibiotic therapy, repeated surgical interventions, and are associated with frequent treatment failure (1).

Bacteriophage therapy (PT) has re-emerged as a promising **adjunctive strategy**, given its specificity, ability to target biofilms, and self-amplifying nature (2). However, clinical implementation remains limited by heterogeneous study designs, lack of standardized protocols, and insufficient clinical evidence (2).

The monocentric **PHAGEFORCE** registry demonstrated the feasibility of PT across five medical indications, with clinical remission in 9/11 (82%) evaluable MSI patients and no serious adverse reactions (3). **EPHICACI** was developed to overcome its limited scale through a multicenter approach.

STUDY DESIGN

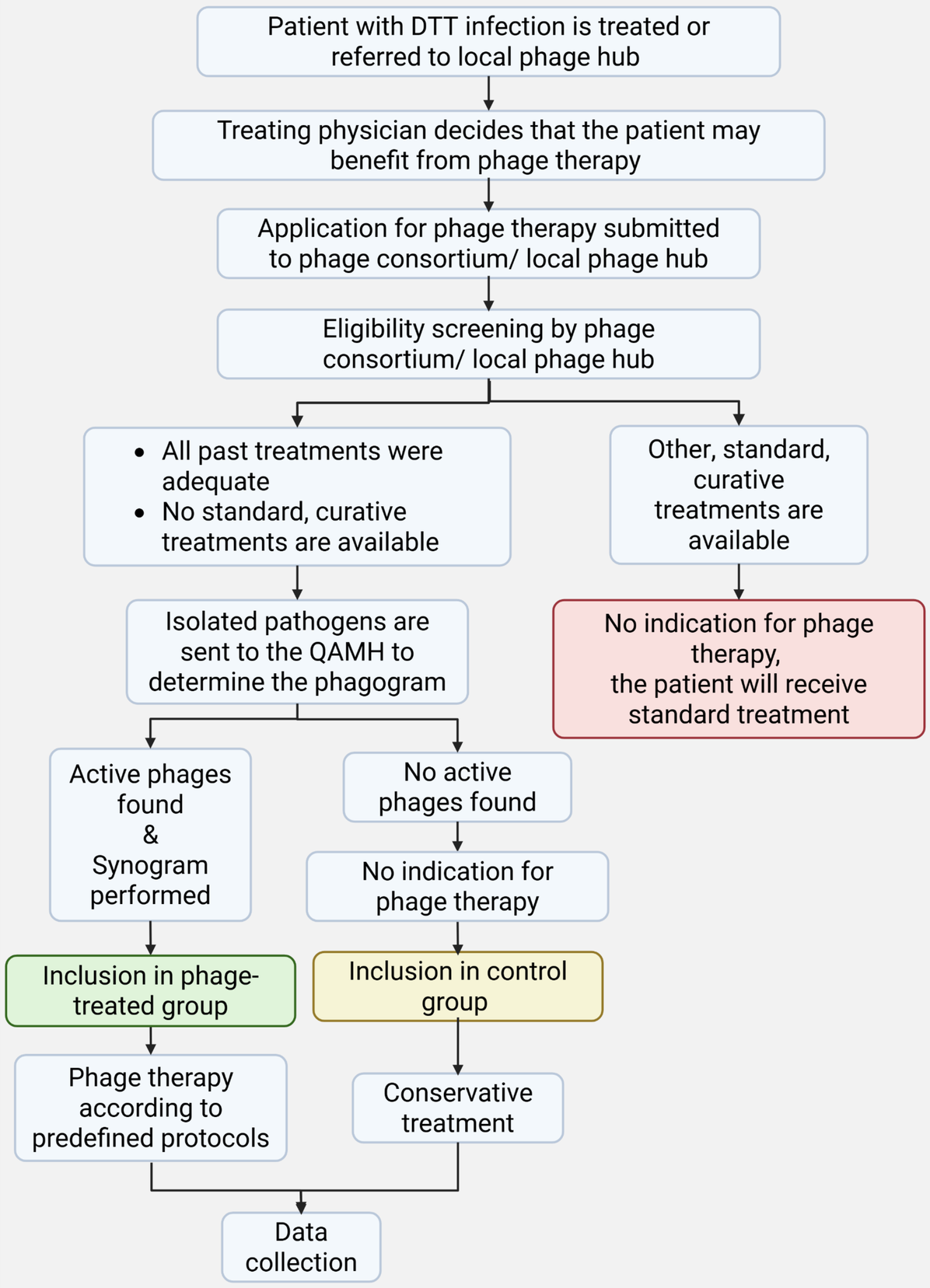
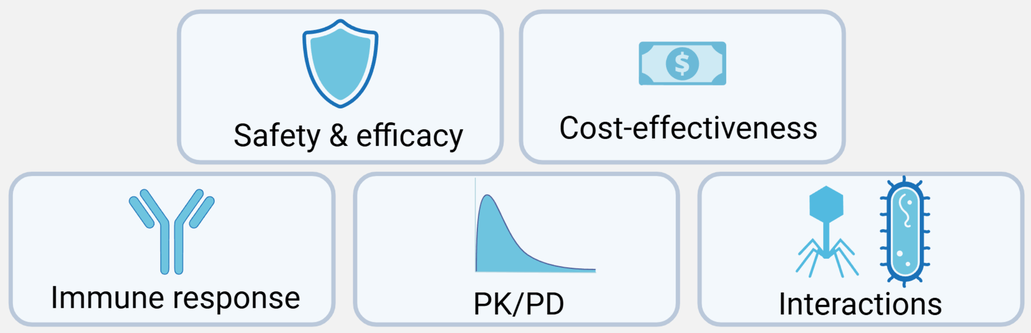


Figure 1. Workflow of the EPHICACI study. Following eligibility screening, bacterial isolates undergo phage susceptibility testing, which determines assignment to the phage-treated or control group.

AIMS



TREATMENT PROTOCOL

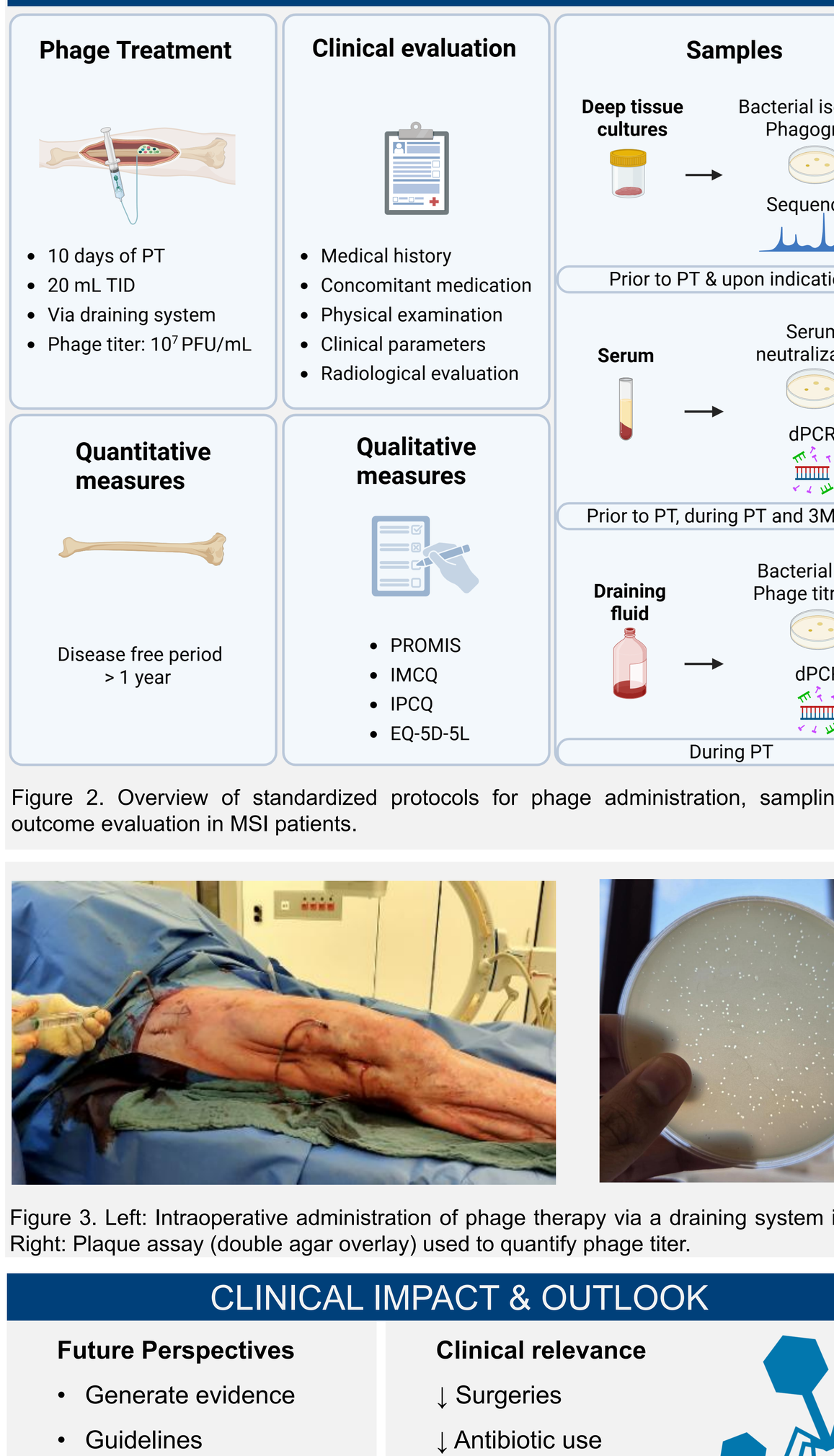


Figure 2. Overview of standardized protocols for phage administration, sampling, and outcome evaluation in MSI patients.

Figure 3. Left: Intraoperative administration of phage therapy via a draining system in MSI. Right: Plaque assay (double agar overlay) used to quantify phage titer.

CLINICAL IMPACT & OUTLOOK

Future Perspectives

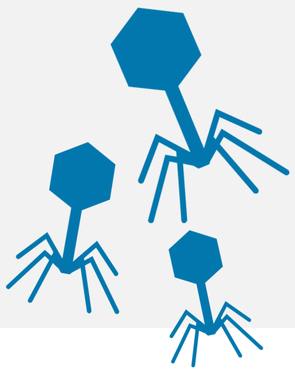
- Generate evidence
- Guidelines
- Reimbursement
- Clinical implementation

Clinical relevance

↓ Surgeries

↓ Antibiotic use

↓ Healthcare costs



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