

Diabetic Foot Ulcers: Prevalence, Current Therapies, Challenges & Future Perspectives.

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Introduction :

Project relevance :

Diabetic foot ulcers (DFUs) develop in about 25% of diabetics. 5% face amputation within 12 months and 78% within 30 days. Half of amputated patients die in a year and 80% within 5 years. Estimated annual cost of DFUs is up to \$US13 billion.

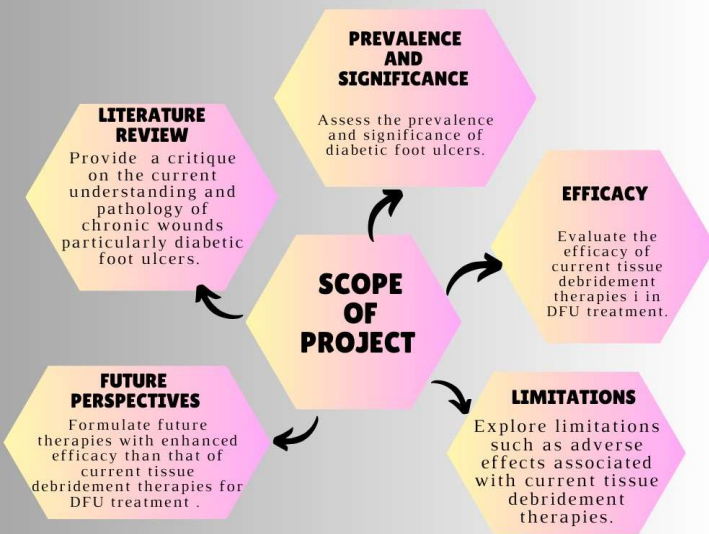


Figure 1. Project Scope.

Chronic wound management (CWM) Strategy:

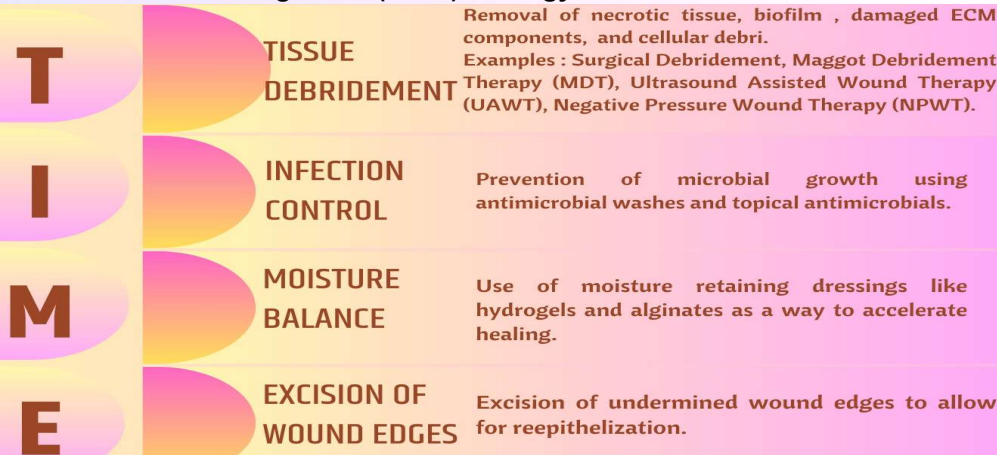


Figure 2. T.I.M.E Principle Chronic Wound Management Principle.

References

1. International Diabetes Federation
2. Ellis, Lin and Tartar, 2018
3. Nickinson et al., 2020
4. Halim, Khoo and Mat Saad, 2012

Acknowledgements

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Methodology:

Table 1. Literature Search Eligibility Criteria

	Inclusion Criteria :	Exclusion Criteria:
Publication dates	2018-2023	-
Selection Criteria	Case Studies Open label Study Open Randomized Control Trials	Bibliographic Review Systematic Review
Subjects	Diabetic foot ulcer patients	Animals
Wound type	Diabetic foot ulcers	Vascular and Pressure ulcers
Maggot Strain	Lucilia sericata	Lucilia cuprina
CWM strategy	Tissue debridement: Maggot Debridement therapy (MDT) Negative Pressure Wound Therapy (NPWT) Ultrasound Assisted Wound Therapy (UAWT)	Infection control Moisture balance Excision of wound edges

Discussion and conclusion:

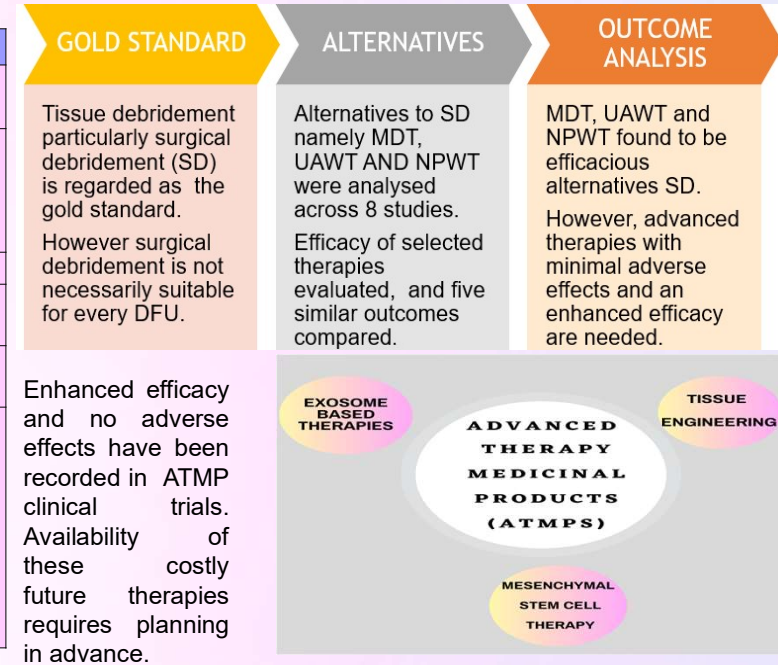


Figure 3. Potential ATMP therapies for DFUs.

Result Analysis:

Table 2. Efficacy analysis of MDT, UAWT and NPWT in DFU treatment.

Outcome	CURRENT TISSUE DEBRIDEMENT THERAPY		
	MDT	UAWT	NPWT
Wound healing time	Between 3 - 12 weeks.	Between 6 - 14 weeks.	Outcome was not analysed.
Changes in wound size (cm ²)	-Wound size reduced in MDT treated DFUs when compared to untreated wounds.	- Mean wound size reduced in UAWT treated patients when compared to untreated DFU patients.	-Mean wound size reduced after NPWT compared to before treatment.
Polymicrobial load (%)	Outcome was not analysed.	Polymicrobial cultures decreased in UAWT treated DFUs compared to untreated DFUs.	Polymicrobial load significantly decreased on NPWT treated compared to untreated wounds.
Granulation tissue (cm ²)	Granulation tissue formed.	Outcome was not analysed.	Granulation tissue formed.
Adverse effects (limitations)	Pain, chilling, failure to heal leading to foot amputation.	Pain, cellulitis and increased wound exudate .	Recurrence and death recorded within one year.