

## A Randomized Controlled Trial Comparing Mupirocin and Polysporin Triple Ointments in Peritoneal Dialysis Patients: The MP3 Study

McQuillan RF, Chiu E, Nessim S, et al. Clin J Am Soc Nephrol 2012;7:297-303



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## ISPD Guidelines/Recommendations for PD-related Infections 2005 & 2011

- Prevention of catheter infections (and thus peritonitis) is the primary goal of exit-site care. Antibiotic protocols against *Staph. aureus* are effective in reducing the risk of *Staph. aureus* infections
- Antibiotic Options for Preventing Exit-Site Infections:
  - Exit-site mupirocin:
    - Daily after cleansing in all patients
    - Daily after cleansing in carriers only
    - Only if exit-site culture positive for *Staph. aureus*
  - Intranasal mupirocin:
    - Every month in nasal carriers
    - Only if nose culture positive for *Staph. aureus*
  - Exit-site gentamicin:
    - Daily after cleansing in all patients

Perit Dial Int 2005;25:107-31  
Perit Dial Int 2011;31:814-30

## MP3 Trial

### Objective:

- To assess if the application of Polysporin Triple (P3) ointment to the PD catheter exit site is superior to mupirocin ointment in the prevention of PD-related infections

### Design:

- Multi-centre, randomized, double-blind, controlled

### Population:

- Inclusion:** age  $\geq 18$  yrs; "medically stable"
- Exclusion:** ARF; current catheter-related infection or infection within past 3 months; PO, IV or IP antibiotics at randomization or within past 1 week; allergy to any component of P3 or mupirocin; LRD within 6 months of study completion date

## MP3 Trial

### Intervention:

- P3 ointment vs. mupirocin ointment applied to PD catheter exit site using cotton-tipped applicator with each dressing change
- No other exit-site applications outside protocol allowed

### Follow-up:

- 18 months or until death or catheter removal

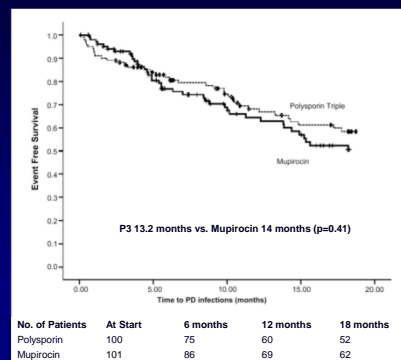
### Outcomes:

- 1° Endpoint:** time to first PD-related infection (exit-site infection, tunnel infection and/or PD peritonitis)
- 2° Endpoints:** catheter removal for refractory infection, hospitalization due to PD-related infection, death due to PD-related infection, all-cause mortality, and transfer to HD

## Baseline Characteristics

Characteristic	P3 (n=101)	Mupirocin (n=100)
Age (yr)	59.36 $\pm$ 15.04	61.02 $\pm$ 13.66
Sex (% male)	62	66
Ethnicity (% Caucasian)	38	43
Median time on PD (months)	20.3	17.1
CAPD: Incident (%)	16	16
Prevalent (%)	32	31
APD: Incident (%)	14	17
Prevalent (%)	39	36
Diabetes (%)	46	42
Immunosuppressants (%)	10	11
Previous PD peritonitis (%)	25	36
Previous HD (%)	28	34
Baseline MRSA positive (%)	3.2	4.3
Previous mupirocin use (%)	55	51

## 1° Endpoint: Time to First PD-Related Infection

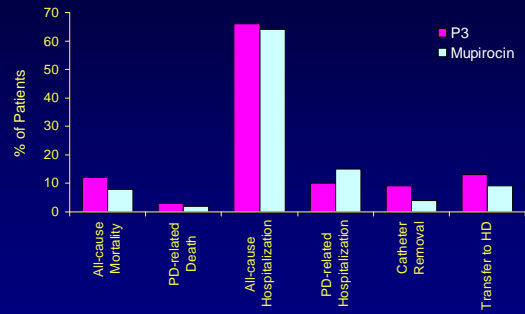


## Characteristics of First PD-related Infections

Type of Catheter-Related Infection	P3 (n=101)	Mupirocin (n=100)	P Value
<b>Peritonitis</b>	23	28	0.48
Gram-positive	13	15	0.71
Gram-negative	2	6	0.16
Fungal	1	0	0.31
Culture negative	7	7	1.00
<b>Exit-site infection</b>	16	8	0.10
Gram-positive	7	5	0.56
Gram-negative	1	2	0.56
Fungal	6	0	0.01
Culture negative	2	1	0.56

75 patients with PD-related infections (P3 39 vs. mupirocin 36)  
(Peritonitis - 51; Exit-site infections - 24; Tunnel infections - none)

## Secondary Endpoints



All secondary endpoints not statistically different between P3 vs. mupirocin

## Infection Rates Over Full Duration of Study

Type of Catheter-Related Infection	P3		Mupirocin		P Value
	n	Rate	n	Rate	
<b>Peritonitis</b>	40	0.37	48	0.40	0.39
Gram-positive	24	0.22	25	0.21	0.88
Gram-negative	4	0.04	13	0.11	0.03
Fungal	4	0.04	0	0.00	0.05
Culture negative	8	0.07	10	0.08	0.64
<b>Exit-site infection</b>	30	0.28	14	0.12	0.02
Gram-positive	9	0.08	6	0.05	0.43
Gram-negative	10	0.09	5	0.04	0.20
Fungal	8	0.07	1	0.01	0.02
Culture negative	3	0.03	2	0.02	0.65
<b>PD-related Infections</b>	70	0.65	62	0.52	0.48

## Conclusion

- Application of P3 ointment to the PD catheter exit site was not shown to be superior to mupirocin ointment in the prevention of PD-related infections
- Lower incidence of gram-negative peritonitis with P3 ointment vs. mupirocin ointment but higher incidence of fungal peritonitis and fungal exit-site infections
- Higher incidence of rash with P3 ointment (n=14) vs. mupirocin ointment (n=6)

## Study Critique

### Strengths:

- Randomization, allocation concealment and blinding well done
- Assessed hard clinical endpoints, e.g. all-cause/PD-related death and all-cause/PD-related hospitalization
- Canadian study (2 sites in Ontario)

### Limitations:

- Short follow-up period (18 months) but median time to first PD-related infection ~14 months
- Adverse events not systematically assessed
- High discontinuation rates in both groups (slightly higher in P3)
- Increased fungal infections with P3 → hypothesis generating
- Helpful to include 3<sup>rd</sup> arm with gentamicin ointment

## Clinical Application

- ✗ **Efficacy:**
  - Lower incidence of gram-negative peritonitis with P3 but higher incidence of fungal peritonitis and fungal exit-site infections
- ✗ **Safety:**
  - Higher incidence of rash with P3
- ☐ **Compliance:**
  - Applied with each dressing change
- ✗ **Cost:**
  - P3 \$6.22/15 gm vs. Mupirocin \$5.59/15 gm

Application of Polysporin Triple ointment to the PD catheter exit site cannot be recommended to prevent PD-related infections!