

**Supplemental Table 1: Single centre/region studies assessing for clonal *Pseudomonas aeruginosa* strains**

Country	Region	Focus	Time Period	Testing modality	Cohort	Main Findings	Ref
Australia	Sydney	Adults	2001	PFGE	18	Pilot project where 56% of patients were infected with a single <i>PA</i> clone (AES-1, now called AUST-01)	(1)
	Melbourne	Peds	1999	PFGE	152	55% of <i>PA</i> infected children (18% of entire clinic) were infected with a single clone (AUST-01)	(2, 3)
	Melbourne	Peds	1999-2002	PFGE	149	After the introduction of segregated clinics, AUST-01 prevalence had fallen to 14%, although infrequent incident cases continued to be observed. This further fell to 6% by 2007(4).	(5)
	Brisbane	All	2001-2002	ERIC-PCR, PFGE	100	AUST-01 was identified in 8% of individuals. However, a more common strain called pulsotype-2 (eventually AUST-02) was found in 39% of individuals (50% of children and 28% of adults)	(6, 7)
	Tasmania	Adults (+15)	2003-2005	RAPD-PCR, PFGE	41	26% were identified to have a clonal strain; AES-III, the Tasmanian-strain (now called AUST-03) and 12% were identified to have a minor strain; AES-4 or the Tasmanian minor strain, now called AUST-04). One patient with AUST-01 was identified who had previously resided in a hyper-endemic local.	(8)
Belgium	Hopital Erasme & Zeeprevenitorium	All	1998-1990	PFGE	31	They identified four pairs of patients with isolates of the same pulsotype and a history which would support potential for patient to patient spread, but did not observe a wide spread clone in either location.	(9)
	Zeeprevenitorium De Haan	All	2001-2002	RAPD - PCR then fAFLP	76	Assessing serial <i>PA</i> isolates obtained during inpatient rehabilitation treatments of patients referred from one of seven Belgian CF centres for inpatient care these investigators observed 5 potential transmission events. At baseline, more than half of the patients had a clonal strain	(10)

						with the most prevalent strains accounting for 13%, 9% and 8% of all infections	
Brazil	Porto Alegre	NS	1996-1997	PFGE	43	A highly heterogeneous population of <i>PA</i> with only one pair of unrelated patients sharing an isolate.	(11)
	San Paulo	Peds	1996	RAPD	96	Of 38 <i>PA</i> infected children, only two occasions in which patients were infected with a similar clone were observed	(12)
	Rio de Janeiro	All	2009	RAPD	20	While few shared strains were observed, no wide spread clones, nor known <i>ePA</i> were observed.	(13)
Canada	British Columbia	Adults	1981-1999	RAPD & PFGE	174	A multi-decade retrospective analysis of prospectively collected isolates revealed a highly heterogeneous <i>PA</i> population. Two clones A002 and A097 (PES) were identified infecting (often transiently) 6% and 5% of the population.	(14, 15)
	Montreal	Adults	2005	RAPD	60	Only limited clonality was observed with similar strain types observed in one pair and one group of three individuals.	(16)
	Southern Alberta	Adults	1979-2015	PFGE & MLST	230	A multi-decade retrospective analysis of prospectively collected isolates revealed a common clone (PES, A097) in 32% of chronically <i>PA</i> infected adults. Strain B and LES at levels of 1 and 3%, respectively were also identified.	(17, 18)
Czech Republic	Prague	All	2004	AFLP & PFGE	69	In a clinic that uses strict segregation owing to prevalent <i>Bcc</i> , only rare clusters of clones involving 3-5 individuals were found. Those with shared strains did have prior contact – generally through distantly attended summer camps.	(19)
	Prague	All	2005-13	RAPD PCR & MLST	131	This group prospectively identified 4 clones infecting $\geq 3$ individuals including: ST253; 10 patients, ST175; 7 patients, ST395; 6 patients and ST179; 6 patients. ST253 was identified in various years through the study with no apparent epidemiological link. No previously established <i>ePA</i> strains were documented in this cohort.	(20)
Denmark	Copenhagen	All	1973-	O-	119	The very first study assessing for clonal <i>PA</i> made use of	(21-

	n		1983	antigen serotyping & Phage typing		phenotypic methods, admittedly less discriminatory than the later genotypic methods. While small clusters of similar isolates were identified, a larger cluster involving a MDR strain (03/9 complex, phage pattern 21/+) was observed in 22-67% of patients over time.	(24)
	Copenhagen	All	1976-2005	AT-biochips	22	In a selective sampling of patients from a large biobank, these investigators observed two predominate strains; “r” (DK-1) infecting 5 patients (identified in 1987) and “b” (DK-2) infecting 8 patients (identified in 1984). Both strains were demonstrated to super-infect patients to the eventual exclusion of previously colonizing strains.	(25)
	Utrecht	Peds	2004-2006	PFGE	56	An individual clone predominated infecting 52% of individuals with chronic infection. However, in patients experiencing incident infection, a much greater diversity was observed, and this clone accounted for only 7%. This clone was not observed in non-CF samples.	(26)
France	Paris	Peds	2004-5	VNTR	46	The vast majority of individuals here had unique strains not shared amongst other clinic goers, although four small clusters involving 3-4 patients each were identified including the prevalent Clone C and PA14, environmentally ubiquitous isolates.	(27)
Germany	Hanover	Peds	1983-1988	PFGE, phage typing & serotyping	NS	Serial isolates were retrospectively assessed for clonal relatedness, where 12 of 40 patients with incident infection were infected with a single clone, TB. Incident cases were no longer observed after strict hygiene control measures.	(28)
	Hanover	Peds	1985-1992	PFGE & Phage typing	46	One particularly common clone - dubbed Clone C, was present in 31% of patients but this clone was similarly found widely distributed in multiple environments suggesting broad endemicity.	(29, 30)
	Hanover	Peds	1998-	A	NS	Prospectively collected and stored isolates from chronically	(31)

			2007	custom multi-locus micro-array		infected and 54 incidentally infected patients. Strains commonly recovered from the environment including Clone C, OC2E and PA14 found in 15, 14 and 8 patients respectively. Analysis of the accessory genome suggested the vast majority of isolates were unrelated, and independently acquired. One presumptive transmission event was observed.	
Iran	Tehran	Peds	2010	ERIC-PRC	23	Ninety-one percent of patients admitted to hospital were infected with a single strain type, type A. This strain was observed commonly within the local hospital where CF patients sought care.	(32)
Ireland	Cork	Peds	1992-1995	RAPD PCR & PFGE	50	They identified only limited genotypic diversity with 10 different strain types identified, in particular Strains A, F, G, H were identified in 12, 14, 15 and 13 individuals respectively. There was correlation in these groups with respect to presumed exposures.	(33)
	Dublin	Peds	2005-2007	PFGE	68	A clone infecting 19% of patients, evenly distributed amongst age ranges was identified. Uniquely it was never observed as a mucoid phenotype.	(34)
	Dublin	Adult	2005-2007	PFGE	NS	An antibiotic resistant <i>PA</i> clone, initially incorrectly identified as <i>Moraxella spp</i> via API 20NE, was found in 23 patients (11% of total clinic), with no evidence of other significant clones.	(35)
Italy	Catania, Sicily	Peds	1998	RAPD-PCR	12	Two pairs of patients sharing clones were identified, including one sibling set	(36)
	Florence	Peds	1998-2000	PFGE	64	Five pairs of patients sharing a similar pulsotype were identified but no clonal strains	(37)
	Verona	All	2008-2009	PFGE	338	A very heterogeneous <i>PA</i> population structure was observed although 4 clusters including; 12 (ID P14), 8 (ID P1), 8 (ID CP2) and 6 individuals (ID P6) were found	(38)

Netherlands	Rotterdam	All	1991-1995	PFGE, AP-PCR	29	In this longitudinal study, great heterogeneity was observed, however, 17% shared a single <i>PA</i> pulsotype	(39)
Northern Ireland	Belfast	Adults	2006	RAPD PCR	29	In a pilot study, no patients shared isolates with the same pulsotype suggesting significant diversity in <i>PA</i> . Notably, however, LES has been identified in this population(40).	(41)
Poland	Warsaw	All	2011-2012	PFGE	75	One <i>PA</i> clone (cluster 19; group A) was identified in 21 patients who had significant social contact. Smaller clusters with up to 7 patients were also identified.	(42)
Qatar	Doha	Peds	2011	AFLP	32	Shared strains amongst members of a large extended family were observed, but no evidence of a wide spread clone.	(43) (44)
Sweden	Gothenburg	All	1999-2012	PFGE MLVA		A prospective study identified three prevalent <i>PA</i> clones; Clone J (7%), Clone B 13 (12%) and Clone A (5%). Clone J, a MDR strain, had previously been identified in CF summer camp associated outbreaks(45).	(46)
Turkey	Istanbul and Ankara	NS	2003	AP-PCR	46	They identified one clone present in 15% of patients, found in both clinics. As patient details were omitted, familial relationships could not be determined.	(47)
United Kingdom	Liverpool	Peds	1995	PFGE flagellin typing	65	A marked increase in CAZ resistant <i>PA</i> was observed in attendees of this clinic. 85% of patients with CAZ-R <i>PA</i> belonged to a single pulsotype, dubbed LES	(48)
	Manchester	Adults	2000	PFGE and pyocin typing	154	A prospective study identified 14% of individuals with a novel clonal <i>PA</i> strain, dubbed Manchester (MA). Notably, this clone was absent in patients segregated owing to <i>Bcc</i> co-infection.	(49)
	Liverpool	Adults	2001-2002	PFGE and PS21-PCR	92	68% of patients, and 79% of <i>PA</i> infected patients were infected with LES. PCR detection of <i>ePA</i> by whole sputum was demonstrated to be highly sensitive and specific.	(50)
	Manchester	Adult	2000-2003	PFGE	243	In this prospective study, the prevalence of both MA and LES increased slowly to 19% over four years. Furthermore,	(51)

						three small novel <i>PA</i> clusters involving 3-8 patients were observed. After cohort segregation, no new cases of <i>ePA</i> were observed.	
	Midlands	Adult	2001-2003	PFGE	157	LES was identified in 11% of attendees, MA in 1% and several small clusters involving 2-7 individuals. However, a novel <i>ePA</i> , the Midlands-1 (Md1) strain was found to infect 30% of the cohort.	(52)
United States	Houston, Texas	Peds	2004-2011	rep-PCR	71	In a prospective study, those patients with chronic <i>P. aeruginosa</i> resistant to $\geq 2$ classes of antibiotics were screened for clonality. A single isolate, Houston-1 infected 45% of patients.	

Definitions; PA=Pseudomonas aeruginosa, ePA = *epidemic P. aeruginosa*, Peds=Pediatric, All= Adult and Pediatric patients, LES=Liverpool Epidemic Strain, PES= Prairie Epidemic Strain, Bcc=*Burkholderia cepacia* complex, CAZ=ceftazidime, R=resistant, NS=not stated, MA= Manchester epidemic strain

### Supplemental References

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