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Appendix 4: Reports of accidental intrathecal injection of vincristine

This document summarises the reported cases of accidental injection of vincristine by the intrathecal route cited in the literature review. A full list of references is provided in that document; refer to Appendix 3.

Abbreviations used: **ALL** acute lymphocytic leukaemia **CSF** cerebrospinal fluid **CYT** cytarabine **FFP** Fresh Frozen Plasma
IT intrathecal **IV** intravenous **LL** lymphocytic leukaemia **MTX** methotrexate **NR** not recorded

Ref No	Author	Year of Publication	Country	Details	Contributing factors	Dose of vincristine	Management	Outcome	Notes
2	Schochet	1968	USA	2.5yo female with ALL	IT MTX	3mg	CSF exchange	Died on day 3.	
3	Shepherd	1978	USA	5.5 yo child with ALL	IT MTX, CYT,hydrocortisone. 2nd dose vinc instead of IT CYT.	1.2mg	Recognised immediately. CSF removed, IT hydrocortisone.	Died 12 days later	
4	Slyter	1980	USA	29 yo woman with stage iv-a lymphoblastic lymphoma	IT MTX, CYT,hydrocortisone.	2mg	Recognised immediately. CSF removed, IT saline, oral dexamethasone.	Died on Day 14.	
5	Solimando	1982	USA	refers to two unpublished cases	Syringes not labelled - only outer wrap which was removed prior to placement on the tray.	NR	NR	Died.	
6	Manelis	1982	Israel	5 yo female	Due to procedural errors.	0.9mg	Recognised after 30minutes.	Died 17days later.	
7	Gaidys	1983	USA	23month old female with ALL, in remission	IT MTX, CYT,Hydrocortisone. Vincristine instead of IT MTX.	0.68mg in 6.8ml 2mg/m2	Recognised immediately but not treated for 4.5hours, aggressive treatment including CSF exchange and folinic acid.	Died on Day 6.	

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8	Williams	1983	USA	16 yo male with ALL	IT MTX. ? Syringes incorrectly labelled, administered by local physician.	2mg	Referred to hospital 48 hrs post dose. High dose folinic acid, IV dexamethasone.	Brain dead by day 7, life support discontinued day 36.	
51	The Sydney Morning Herald	1987	Australia (Adelaide)	17yo female	IT MTX. Administered by a doctor (intern) with inadequate experience. Failed to read labels.	NR	NR	Died after 8 days.	
9	Dyke	1989	USA	Adult male with Burkitt's lymphoma	NR	NR	Aggressive early treatment with ventriculolumbar CSF lavage using lactated Ringer's solution and ffp over 24 hours + glutamic acid IV over 24 hours followed by oral glutamic acid.	Survived but died 3months later from lymphoma	
10	Bain	1991	UK	56 yo male beta cell LL	Oral MTX	0.3mg (2mg syringe)	Error notice during administration, only part dose given. Sent home as no ill effects anticipated, CSF aspirated.	Respiratory arrest 9 days later, brain dead at Day 30.	
11	Bleck	1991	USA	23 yo male with ALL	IT MTX, hydrocortisone.	2mg	Recognised immediately. CSF lavage, IV dexamethasone, folinic acid, vitamin B12, thiamine and IV pyridoxine.	Brain dead at Day 29, died day 348 after active support withdrawn when primary disease returned.	
24	Brahams	1991	UK	16yo male	IT MTX. Two junior doctors, new at the Hospital. No senior staff available.	NR	NR	Died.	Two junior doctors convicted of manslaughter, later overturned

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									on appeal.
12	al Fawaz	1992	Saudi Arabia	15month old male with ALL	IT MTX. Fourth dose of vinc, second of combination. All drugs brought to treatment room.	0.7mg (1.5mg/m2)	Realised 3hrs later. Folinic acid rescue, IT hydrocortisone.	Died 75days later, after respiratory arrest and artificial respiration since Day 7.	
13	Zaragoza	1995	USA	6 yo male with ALL	IT MTX.	NR	Recognised immediately. CSF drainage/lavage, IV folinic acid, glutamic acid, pyridoxine.	Survived with paraplegia, requirement for nocturnal respiratory assistance at 24months.	
65	The Age	1995	Australia (Geelong, Vic)	27yo male	NR	NR	NR	Survived with quadriplegia.	
14	Lau	1996	Singapore	27 yo female with ALL	IT MTX. A junior doctor was assigned to administer the chemotherapy accidentally gave the vincristine via ommaya reservoir.	2mg	Mistake realised the following day. CSF lavage, folinic acid and oral glutamine.	Died 10 days later.	
15	Michelagnoli	1997	UK	10 yo female with b-cell lymphoma	IT MTX, CYT and IV vincristine were scheduled to be given under general anaesthesia.	NR	Recognised immediately. CSF drainage/lavage, folinic acid, pyridoxine, glutamic acid, iv caffeine.	Paraplegic at 18months.	

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16	Meggs	1998	USA	59 yo female with ALL	Intraventricular CYT (omaya reservoir). Vincristine instead of IT CYT.	2mg in 10ml	Recognised immediately. CSF lavage, glutamic acid, ffp. 95% of dose recovered.	Died day 40.	
18	ISMP Alert	1998	USA	59 yo female	IT CYT.	2mg vinc	Recognised immediately, optimal care.	Died 9 days later.	
17	Fernandez	1998	Canada	7 yo female with ALL	IT MTX, CYT, hydrocortisone (Childrens Cancer Group Protocol 1992). Vincristine administered instead of IT hydrocortisone. Experienced and competent physician. The oncology ward was full thus admitted to another ward where the injection took place (treated some oncology patients in the past). The IT chemotherapy was not delivered or stored separately, nor was it brought into the room by the physician. The IT chemotherapy was identified by reading the labels when it came into the room however the presence of the fourth syringe (vincristine) was not recognised. . The chemotherapy was not placed on the lumbar puncture tray by the administering physician and the tray was	1.5mg	Recognised immediately. CNS lavage, folinic acid, glutamic acid, dexamethasone.	Died 13 days later	

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					adjusted in such a way as to be above eye level of the seated physician. Finally the intrathecal (and intravenous) chemotherapy labels were not read again by the administering physician prior to administration.				
19	Al Ferayan	1999	Saudi Arabia	7 yo female with ALL		0.5mg	CSF lavage commenced within 2 hours. Ringers, glutamic acid.	Motor paraparesis at 34months.	
20	Kwack	1999	Korea	3 yo male with ALL	NR	NR	NR	Died after 6days.	
31	ISMP Alert	2000	USA	Adult male with Burkitt's lymphoma	IT MTX.	NR	NR	Died 10 weeks after injection.	
21	Dettmeyer	2001	Germany	5yo female with ALL	IT MTX. Doctor prepared syringes and was then absent when a colleague confused the syringes even though they were inscribed.	NR	Recognised immediately.	Died 7 days later.	preliminary investigations led to the reproach of negligent killing in both cases. Civil claims were regulated by legal liability insurance. To avoid a main trial the two charged doctors accepted a pecuniary penalty and a sceond pecuniary penalty only if they become punishable during probation.

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21	Dettmeyer	2001	Germany	57 yo male with LL	IT MTX, CYT. Syringe with IT drug was missing and the resident took the vincristine.	NR	NR	Died four weeks later.	
23	Dyer	2001	UK	Same case as below (25)					2 Doctors suspended and charged with manslaughter
25	Dyer	2001	UK	1999 case - 12yo male	NR	NR	NR	Died	2 doctors cleared of manslaughter after prosecutors decided death was caused by 'chance events and failings'.
22	Dyer	2002	UK	18yo male	IT MTX. Both drugs administered IT. Registrar ordered senior house officer to inject even after a query. New staff unfamiliar with procedures. Syringes delivered together.	NR	Recognised within 15minutes.	Died	Doctor charged with manslaughter. Trial halted due to ill health of the defendant (64).
26	Alcaraz	2002	Spain	12yo female with ALL	IT MTX, CYT, hydrocortisone.	2mg in 20ml	Recognised after 30minutes. CSF washout/exchange, glutamic acid.	Died day 83.	
27	7.30report	2004	Australia (Sydney)	28yo male with Burkitt's lymphoma	IT MTX. Doctor (radiology) wrote 'vincristine and methotrexate given intrathecally as requested'. Warning label on vincristine incomplete. Small type on labels, darkened room.	NR	Recognised 5 days later after paralysis of lower limbs. CSF drainage	Died after 28+ days.	

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73	Mercury News	2005	USA	21yo male with non-Hodgkin's lymphoma	Wrong drug	NR	NR	Died 3 days later.	Hospital to cease preparation of vincristine in syringe and warning labels to be required.
74	ISMP Alert	2005	USA	Same case as 73.	A syringe containing vincristine for another patient had been accidentally delivered to the patient's bedside. A physician administered the drug intrathecally, believing it was a different medication intended for that route of administration.	NR	As above	As above	As above