

Intravenous Insulin Prescription and Fluid Protocol

Error sef x1L ADULT (over 18 years) patients with a diagnosis of DXA NOT FOR USE IN CHLDREN Ward Consultant Admission Dute: Distance EVER use an V syringe to draw up insulin ALWAWS continue subcutameous hitermediate: no basil insulin* "Intermediate: Insulatard, Humplin 1, Insulina", Insulina", "Insulina", Gargine I, Levennin (Edermin), Tresiba" (degute, Levennin), Tesiba" (degute, Levennin) (determin), Tresiba" (degute, Levennin), Tresiba" (degute, Lev					FOR DI	ABETIC KET	O-AC	IDOS	SIS (DKA)							
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ALWAYS continue subcutaneous intermediate* or basal insulan** Private Mundre Date of Burls / Age ***Tessal: Lantus* (glarging), Levemir (defunit), Tresuba (degludec), Address Doctor: All prescriptions for insulin and fluids must be signed Address Parse: All entries must be signed	ALV	VAYS draw (up insulin	using an ir	nsulin syringe											
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Doctor: All prescriptions for insulin and fluids must be signed Nume: All prescriptions for insulin and fluids must be signed Exhibits de or new diagnosis of diabetes mellius Image: Capillary blood ketonaemia on Trust approved ketone meter of 2.3 mmol/L or ketonuria + 4r or more on standard urine sticks Image: Capillary blood ketonaemia on Trust approved ketone meter of 2.3 mmol/L or ketonuria + 4r or more on standard urine sticks Image: Capillary blood ketonaemia on Trust approved ketone meter of 2.3 mmol/L or ketonuria + 4r or more on standard urine sticks Image: Capillary blood ketonaemia wiThOUT aclobasis (pH > 7.3 If patient sticks all ENTRY CNITERIA, commence insulin therapy (see BOX 1); intravenous fluid management (see BOX 2, BOX 3 and BOX 4); and intravenous fluid hydrateneous insulin dose correction may be necessary to estimate the weight of the patient Weight (image: Capillary Biod Melling All Calculated on 0.1 units/R) Weight (image: Capillary Biod Melling All Calculated on 0.1 units/R) Weight (image: Capillary Biod Melling All Calculated on 0.1 units/R) Weight (image: Capillary Biod Melling All Calculated on 0.1 units/R) Weight (image: Capillary Biod Melling All Calculated on 0.1 units/R) Weight (image: Capillary Biod Melling All Calculated on 0.1 units/R) Weight (image: Capillary Biod Melling All Calculated on 0.1 units/R) Weight (image: Capillary Biod Melling All Calculated on 0.1 units/R) Weight (image: Capillary Biod Melling All Calculated on 0.1 units/R) Weight (image: Capillary Biod Melling All Calculated on 0.1 units/R) Weight (image: Capillary Biod Melling All Calculated on 0.1 units/R)	To	ieo [®] (long a	cting glar	ej, Levenin øine)	(deternin), i	resina (degio	iuec),	۸dd	racc							
Nurse: All entries must be signed ENTRY (diagnostic) CRITERIA (ALL must be ticked to establish diagnosis) Established or new diagnosis of diabetes mellitus	Doc	tor: All pres	scriptions	for insulin	and fluids mu	ist be signed		Address								
ENTRY (diagnostic) CRITERIA (ALL must be ticked to establish diagnosis) Established or new diagnosis of diabetes mellitus Capillary block tetonaemia on Trust approved ketone meter of ≥ 3 mmol/L or Lestablished or new diagnosis of diabetes mellitus Capillary block tetonaemia on Trust approved ketone meter of ≥ 3 mmol/L or Lestablished or new diagnosis of diabetes mellitus Intravenous fluid prescription (see BOX 1); Intravenous fluid management (see BOX 2, BOX 3 and BOX 4); and intravenous fluid prescription (see BOX 3): Thravenous fluid hydration and subcutaneous insulin dose correction may be necessary BOX 1: INTRAVENOUS INSULIN THERAPY AND PRESCRIPTION Weight fination dose reference Guide A fixed Rate Intravenous fluid infusion (FINIC) acludated on 0.1 units/kit housing the necessary BOX 1: INTRAVENOUS INSULIN THERAPY AND PRESCRIPTION Weight fination on subcutaneous insulin dose correction may be necessary BOX 1: INTRAVENOUS INSULIN THERAPY AND PRESCRIPTION Weight fination on the patient Print Name: Signature: 100-109 Intravenous fluid prescription (see BOX 1) Print Name: <td colsp<="" td=""><td>Nu</td><td>se: All entri</td><td>es must b</td><td>e signed</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td>	<td>Nu</td> <td>se: All entri</td> <td>es must b</td> <td>e signed</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Nu	se: All entri	es must b	e signed											
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ketonuria ++ or more on standard urine sticks Image: Construction of the statistic of the statistic statis statistic statistic statistic statistic statistic	Cap	illary blood	ketonaen	nia on Trus	st approved ke	etone meter o	of≥3 m	mol/L	or							
Venous bicarbonate <15 mmol/L and/or venous pH <7.3	ket	onuria ++ or	more on	standard u	urine sticks											
In patient satisfies all ENTRY CRITERIA, commence insulin therapy (see BOX 1); intravenous fluid management (see BOX 2; BOX 3: and BOX 4); and intravenous fluid prescription (see BOX 5) If patient has ketonaemia WITHOUT acidosis (pH>7.3 or HCO3+15 mmol/L, intravenous insulin therapy may not be required BUT intravenous fluid hydration and subcutaneous insulin dose correction may be necessary BOX 1: INTRAVENOUS INSULIN THERAPY AND PRESCRIPTION A Fixed Rate Intravenous Insulin Infusion (FRIII) calculated on 0.1 units/kg body weight is recommended (see Weight/insulin dose Reference Guide) In may be necessary to estimate the weight of the patient Insulin dose per hour:	Ver	ious bicarbo	nate <15	mmol/L ar	nd/or venous	pH <7.3	,	DOV	4) : .	<u> </u>		. /	DOV			
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Patient's Weight:	lt m	ay be neces	ssary to es	stimate the	e weight of th	e patient				(Units)			(Un	its)		
Institution does per nour:	Pat	ient's Weigh	nt:		_ kg (Actual/E		*50-59	5	100-	-109	10					
If blood ketones not failing by at least 0.5 mmol/L/hr OR venous bicarbonate not rising by at least 3 mmol/L/hr OR CBG not failing by at least 3 mmol/L/hr - increase insulin infusion rate by 1.0 unit/hr until failing at target rates 80-89 8 130-139 13 Date Time Adjusted dose (units/hr) Prescriber Name Prescriber Bleep *<50kg or >140kg: seek advice from the Diabetes Specialist Team Drug (approved name) Dose Volume Route Prescriber's Signature Prescriber's Print name Prescriber Date Actrapid* 50 Made up to 50ml with UNITS No Volume Route Prescriber's Signature Prescriber Print name Date 0x 2: INTRAVENOUS FLUID MANAGEMENT (Saline regime) AUTION: Slower in young people aged 18-25 years, elderly, regnant, heart or renal failure BOX 3: INTRAVENOUS FLUID MANAGEMENT (Dextrose regime) Once CBG<14 mmol/L;	Insu	ilin dose pe	r nour:		_units Da	ite:			60-69	6	110-	-119 120	11			
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least 3 mmol/L/hr. increase insulin infusion rate by 1.0 unit/hr until falling at target rates Image: Signature of the signate of the sisthere of the signature of the signature of t	bica	arbonate no	t rising by	at least 3	mmol/L/hr O	R CBG not fall	ing by a	at	90-99	9	>14()	*			
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Actrapid® 50 Made up to 50ml with UNITS IV Signature Print name Actrapid® 50 Made up to 50ml with UNITS IV	Dru	g (approved	l name)	Dose	Vo	lume	Ro	ute	Prescribe	Prescriber			Date			
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.9% sodium chloride 1 litre (check K+) Over next 4 hours the SAME time .9% sodium chloride 1 litre (check K+) Over next 4 hours Run Dextrose regime and insulin therapy in the same line via a three way non-return valve .nticipate a fall in potassium and replace (see BOX 4) Run Dextrose regime and insulin therapy in the same line via a three way non-return valve SYRINGE PREPARATION BOX 4: POTASSIUM REPLACEMENT Prepared and administered by Date Time started Time stopped Add potassium as per guidance below EXCEPT for the first Saline (1 hour) bag ONLY use pre-prepared bags ONLY use pre-prepared bags >5.5 mmol/L None 3.5 – 5.5 mmol/L 40 mmol KCl per litre (see rate in Box 2) 40 mmol KCl per litre (see rate in Box 2) Image: Add potassium needs to be given- See rate in Box 2) Started Started Started).9% so	odium chlor	ide 1 litre	(check K+)	Over n	ext 2 hours	Run th	hrough Saline and Dextrose regime in 2 separate lines at								
Image: Solution chloride 1 litre (check K+) Over next 4 hours Run Dextrose regime and insulin therapy in the same line via a three way non-return valve Re-assessment of cardio-vascular status at 12 hours is mandatory, further fluid may be required BOX 4: POTASSIUM REPLACEMENT SYRINGE PREPARATION BOX 4: POTASSIUM REPLACEMENT Prepared and administered by Date Time Time started stopped Stopped EXCEPT for the first Saline (1 hour) bag ONLY use pre-prepared bags ONLY use pre-prepared bags >5.5 mmol/L None None Stopped 3.5 – 5.5 mmol/L 40 mmol KCl per litre (see rate in Box 2) 40 mmol KCl per litre (senior review if additional potassium needs to be given- See rate in Box 2)).9% so	odium chlor	ide 1 litre	(check K+)	Over n	ext 4 hours	the SA	AME t	ime							
Infee way non-return value Re-assessment of cardio-vascular status at 12 hours is mandatory, further fluid may be required SYRINGE PREPARATION BOX 4: POTASSIUM REPLACEMENT Prepared and administered by Date Time Time Add potassium as per guidance below EXCEPT for the first Saline (1 hour) bag ONLY use pre-prepared bags ONLY use pre-prepared bags Image: Started Stopped >5.5 mmol/L None Started Stopped 3.5 – 5.5 mmol/L 40 mmol KCl per litre (see rate in Box 2) Image: Stopped Image: Stopped <3.5 mmol/L).9% so	odium chlori	Ide 1 litre	(check K+)	Over n	ext 4 hours	Run D	extro	se regime an	d insulin ⁻	therapy i	n the sa	me lir	ne via a		
SYRINGE PREPARATION BOX 4: POTASSIUM REPLACEMENT Prepared and administered by Date Time storped Started Stopped EXCEPT for the first Saline (1 hour) bag ONLY use pre-prepared bags ONLY use pre-prepared bags Image: Stopped Stopped Stopped Stopped<	лпасір	ate a fall in R	potassiun	n and repla	dio-vascular o	tatus at 12 h	oursis	mand	atory furthe	r fluid m	av he reo	wired				
STRINGE PREPARATION BOX 4: POTASSIDIVI REPLACEMENT Prepared and administered by Date Time Add potassium as per guidance below administered by started stopped EXCEPT for the first Saline (1 hour) bag ONLY use pre-prepared bags ONLY use pre-prepared bags Image: Started stopped in the stoppe											ay be req	Jan cu				
Prepared and administered by Date Time Time Add potassium as per guidance below administered by started stopped EXCEPT for the first Saline (1 hour) bag ONLY use pre-prepared bags ONLY Stopped >5.5 mmol/L None Stopped 3.5 – 5.5 mmol/L 40 mmol KCl per litre (see rate in Box 2) Stopped <3.5 mmol/L	Dear	SYRIN			Time	BOX 4: P	JTASS		REPLACEN			0.11/				
Started Started Started Started Started Started Started Started Started ONLY use pre-prepared bags ONLY use pre-prepared bags >5.5 mmol/L None Started 3.5 – 5.5 mmol/L 40 mmol KCl per litre (see rate in Box 2) Started <3.5 mmol/L	Prep	areu and listered by	Date	started	stopped				Potassium as	st Saline	ance bel (1 hour) !	UW hag				
Start disc pre prepared digs Start disc pre prepared digs None 3.5 – 5.5 mmol/L 40 mmol KCl per litre (see rate in Box 2) <td>aunni</td> <td>istered by</td> <td></td> <td>Starteu</td> <td>stopped</td> <td></td> <td></td> <td colspan="8">EXCEPT for the first Saline (1 hour) bag</td>	aunni	istered by		Starteu	stopped			EXCEPT for the first Saline (1 hour) bag								
3.5 – 5.5 mmol/L 40 mmol KCl per litre (see rate in Box 2) <3.5 mmol/L		>5.5 mmol/l							None							
<3.5 mmol/L						3.5 – 5.5 m	mol/L	40 mmol KCl per litre (see rate in Box 2)								
potassium needs to be given- See rate in Box 2)						<3.5 mm	ol/L	40 mmol KCl per litre (senior review if additional								
									potassium	needs to	be given-	See rat	e in B	ox 2)		

Intravenous Insulin Prescription and Fluid Protocol FOR HYPEROSMOLAR HYPERGLYCAEMIC STATE (HHS)

	For us	se for ALL	ADULT (o	ver 18	years) pa	atients wi	ith a dia	agnosis	of		Ward	Con	sultant	Admiss	ion Date	e:		
	HHS NOT F	OR USE I		N										Dischar	ge Date	:		
	NEVER use an IV syringe to draw up insulin										Surname First Name							
	ALWA	YS draw	up insulin	using a	an insulin	syringe												
	ALWA	YS contir	ue subcut	aneou	s interm	ediate* o	r basal	insulin*	**	Hospit	al Number		Date of	Birth / Ag	e			
	*Inter	mediate:	Insulataro (glargine	d, Hun -) Leve	nulin I <i>,</i> I emir [®] (de	nsuman E temir) Tr	Basal resiha [®]	(degluc	dec)	NHS Number								
	Touje	o [®] (long a	cting glarg	gine)				(468.46		Addre	SS							
	Docto	r: All pre	scriptions	for insi	ulin and	fluids mu	st be si	igned										
	Nurse	: All entri	ies must b	e signe	ed													
	ENTF	RY (diag	nostic) C	RITER	IA (ALL	must be	e ticke	ed to e	establi	ish dia	agnosis)							
	Нуро	volaemia																
	Marke	ed hyperg	lycaemia	(>30 m	imol/L) w	/ithout sig	gnificar	nt hypei	rketon	aemia	(<3.0 mmol	/L) or aci	dosis (pH	>7.3, bi	carbo ۲	nate		
-	Osmo	lality >32	0 mosmol	/kg Vei	nous bica	arbonate	<15 m	mol/La	nd/or v	venous	s pH <7.3				L			
F	If pati	ent satisf	ies all ENT	RY CRI	TERIA. co	ommence	e intrav	enous f	fluid ma	anager	ment (see B	OX 2)						
	ONLY	commen	ce intrave	nous i	nsulin th	erapy IF	patien	t has sig	gnifica	nt keto	onaemia (bl	ood keto	nes >1.0	mmol/L	or			
	keton	uria (urir	e ketones	s >++) ((see BOX	1)												
	BOX	1: INTR	AVENOL	JS INS	ULIN T	HERAPY	AND	PRESC		ON	Weight	/insulin	dose re	ferenc	e Gui	ide		
ľ	A Fixe	d Rate In	travenous	Insulir	n Infusior	n (FRIII) ca	alculate	ed on 0.	.05 un	its/kg	Weight	Insulin	Wei	ght (in	Insu	in		
	body	weight is	recomme	nded (s	see Weig	ht/insulir	n dose	Referen	nce Gui	de)	(in kg)	dose/hi	r kg)		dose	/hr		
	It may	/ be nece	ssary to es	timate	e the wei	ght of the	e patier	nt				(Units)			(Unit	ts)		
	Patier	nt's Weigl	nt:		kg	(Actual/Es	stimate	ed)			50-59*	2.5	100-)-109 5				
						_					60-69	3	110-	-119 5.5				
	Insuli	n dose pe	r hour:		uni	ts Da	te:				70-79	3.5	120-	129	6			
											80-89	4	130-	139	6.5			
-	Print Name: Signature:										90-99	4.5	>140)	*			
	Date	Lime	Adjusted c	lose	Prescribe	r Name	Presci	riber ture	BI	еер	*<50kg o	r >140kg	: seek adv	vice fron	n the			
ŀ			(units) m j				Jighta	ture			Diabetes	specialis	t Team					
Ē																		
	Drug	(approved	d name)	Dos	e	Vo	lume		Rou	ute	Prescriber	's	Presc	riber		Date		
											Signature	9	Print	name				
	Actra	pid		50	N	/lade up t	:o 50m	l with										
				UNIT	rs Na	CI 0.9% (1		per mL)) \	/								
BC	X 2: IN	NTRAVEN	OUS FLUID) MAN/	AGEMEN	T (Saline	regime	e)	BOX 3	INTR/	AVENOUS FL	UID MAN	NAGEMEN	NT (Dext	rose r	egime)		
CA	UTION	: Slower	in young p	people	aged 18-	25 years,	, elderl	у,	Once (CBG<1	4 mmol/L							
pre	egnant	, neart or	renal failu	ire (no KC	-11	Over 1 ^s	^{it} hour		Cive 1	00/ De	vtraca ta ru	a at 125 a	mala /br AA					
0.5	% sou	ium chlor	ide 1 litre		.I) : K+)	Over 1	nour	ours	Contin	2 10% Dextrose to run at 125 mis/hr AND								
0.5	% sodi	ium chlor	ide 1 litre	(check	K+)	Over ne	-xt 2 h	ours	Run th	Until United Saline as per Saline regime (See BUX 2)								
0.9	% sodi	ium chlor	ide 1 litre	(check	K+)	Over ne	ext 4 h	ours	the SA	ME tin	ne			. – sepa	ace m			
0.9	% sodi	ium chlor	ide 1 litre	(check	, : K+)	Over ne	ext 4 ho	ours	Run Dextrose regime and insulin therapy in the same line via a									
An	ticipat	e a fall in	potassium	and re	eplace (s	ee BOX 4)		three	way no	on-return va	lve						
		R	e-assessm	ent of	cardio-v	ascular s	tatus a	at 12 ho	urs is r	nanda	tory, furthe	r fluid m	ay be req	uired				
	SYRINGE PREPARATION BOX 4:										JM REPLA	CEMEN	IT					
Prepared and Date Time Time										Ad	d potassium	as per g	uidance k	below				
a	dminist	tered by		sta	arted	stoppe	ed			EXC	CEPT for the	first Saliı	ne (1 hou	r) bag				
											ONLY use	pre-prep	ared bag	S				
								>5.5	mmol,	/L			None					
								3.5 - 5	.5 mm	101/L 40 mmol KCl per litre								
			+					<3.5	mmol,	40 mmoi KCi per litre (senior review as additional								
											potassium needs to be given)							

BOX 5: INTRAVENOUS FLUID PRESCRIPTION

For information on dilutions, infusion rates, compatibilities and monitoring parameters, consult the:

Injectable Medicines Guide or contact Medicines Information

CAUTION: Slower in young people aged 18-25 years, elderly, pregnant, heart or renal failure

Date	Solution	Volume	Additives and dose Check potassium		Rate	Duration	Route	Prescriber	Batch	Given by	Time	Time	Pharm and
								Signature & Bleep	No.		started	stopped	supply notes
			Refer to B	OX 4						2 nd			
										/ check			
	0.9% NaCl	1 litre	KCI	None	1000 mls/hr	1 hr	IV						
	0.9% NaCl	1 litre	KCI		500 mls/hr	2 hrs	IV						
	0.9% NaCl	1 litre	KCI		500 mls/hr	2 hrs	IV						
	0.9% NaCl	1 litre	KCI		250 mls/hr	4 hrs	IV						
	0.9% NaCl	1 litre	KCI		250 mls/hr	4 hrs	IV						
	0.9% NaCl	1 litre	KCI		166 mls/hr	6 hrs	IV						
	10% Dextrose	1 litre			125 mls/hr	8 hours	IV						
	10% Dextrose	500 mls	KCL	0.15%	50 mls/hr	10 hours	IV						

SWITCH FROM FIXED RATE INTRAVENOUS INSULIN				Beds	ide and	laborator	y resul	EXIT CRITERIA (ALL must be ticked)								
INFUSION TO VARIABLE RATE INTRAVENOUS INSULIN				Chec	k creatiı	nine, elect	rolyte	urs then 2	DKA:							
mls/hr IE	I) with 10% Dex	trose with 0.1	5% KCI at 50	to 4	hourly u	ntil venou	is bica		Blood ketones <0.6 mmol/L and							
DKA: CAPILLAR		IES < 0.6 mmo	I/L and	Date	Time	Ketones	Na+	K+	Creatinine	HCO3	рΗ	Osmolality	Signature	Venous bicarbonate >15 mmol/L and		
HCO3 > 15 mm	ol/L and STILL n	ot eating and	drinking											Eating and drinking		
HHS: Biochemic	al markers have	e normalised a	ind STILL											HHS:		
not eating and	drinking													Usmolality normalised and		
PRESCRIPTION																
CBG	Insulin	Insulin	Insulin											Transfer to subcutaneous insulin regime		
mmol/L	units/hr	units/hr	units/hr													
> 14	6													Notes:		
12.1 – 14	4													Maintain IV insulin infusion for 30 minutes		
10.1 - 12	3													after re-starting original insulin regime- IV		
														insulin has a 5 minute half-life		
7.1 – 10	2													ALWAYS continue subcutaneous basal		
4 - 7	1													insulin		
< 4	0.5													Refer to the Diabetes Specialist Team		
Signature														Seek and treat precipitating factors		
Bleep No.														Consider prophylactic or full anticoagulation		
Date	te													Other issues:		
Time																

INTRAVENOUS INSULIN, CBG AND KETONES MONITORING RECORD SHEET

Guide:

Only use for patients on intravenous insulin regimen (use different chart for patients on subcutaneous insulin)

Make sure the patient's hands are clean

Check CBG hourly

Check capillary blood ketone hourly until DKA resolved

DATE	Time	Blood glucose	Blood ketones	Hourly infusion rate (units/hr)	Volume left in syringe (ml)	Volume infused in one hour (ml)	Total volume infused (ml)	Signature	es KEY EVENTS / NOTES
-									

ADDRESSOGRAPH LABEL