TEHNOMEDICA

str.Ciuflea, 38/1 MD-2001, mun. Chișinău, Moldova tel./fax: (022)601 102, 601 087
e-mail <tehnomedica_md@yahoo.com> <tehnomedicamd@gmail.com>

Digitally signed by Roibu Tatiana
Date: 2023.03.01 09:18:39 EET
Reason: MoldSign Signature
Location: Moldova

Anexa nr. 7
la Documentația standard nr.115
din 15.09.2021

CERERE DE PARTICIPARE

Către **Centrul pentru Achiziții Publice Centralizate în Sănătate**

Stimaţi domni,

Ca urmare a anunțului/invitației de participare/de preselecție apărut în Buletinul achizițiilor publice și/sau Jurnalul Oficial al Uniunii Europene, *BAP Nr.67 din 26.08.2022; nr.ocds-b3wdp1-MD-1676966027819* privind aplicarea procedurii pentru atribuirea contractului privind *achiziționarea dispozitivelor medicale (pansamente) conform Programului Național pentru combaterea maladiilor rare - ”Epidermoliza buloasă”, pentru anul 2023 (repetat)*, noi, *Tehnomedica SRL,* am luat cunoștință de condițiile și de cerințele expuse în documentația de atribuire și exprimăm prin prezenta interesul de a participa, în calitate de ofertant/candidat, neavînd obiecții la documentația de atribuire.

Data completării: 01.03.2023

Cu stimă,

Tehnomedica SRL

Director Tatiana Roibu

(semnătura autorizată)

TEHNOMEDICA

str.Ciuflea, 38/1 MD-2001, mun. Chișinău, Moldova tel./fax: (022)601 102, 601 087
e-mail <tehnomedica_md@yahoo.com> <tehnomedicamd@gmail.com>

Anexa nr. 8
la Documentația standard nr.115
din 15.09.2021

DECLARAŢIE
privind valabilitatea ofertei

Către **Centrul pentru Achiziții Publice Centralizate în Sănătate**

Stimaţi domni,

Ne angajăm să menținem oferta valabilă, privind *achiziționarea dispozitivelor medicale (pansamente) conform Programului Național pentru combaterea maladiilor rare - "Epidermoliza buloasă", pentru anul 2023 (repetat)* prin procedura de achiziție cererea ofertelor de prețuri, pentru o durată de 90 zile, (nouăzeci zile), respectiv până la data de 06.06.2023 (ziua/luna/anul), și ea va rămâne obligatorie pentru noi și poate fi acceptată oricând înainte de expirarea perioadei de valabilitate.

Data completării: 01.03.2023

Cu stimă,

Tehnomedica SRL

Director Tatiana Roibu

(semnătura autorizată)

REPUBLICA MOLDOVA

CERTIFICAT DE ÎNREGISTRARE

SOCIETATEA CU RĂSPUNDERE LIMITATĂ "TEHNOMEDICA"

ESTE ÎNREGISTRATĂ LA CAMERA ÎNREGISTRĂRII DE STAT

Numărul de indentificare de stat - codul fiscal

1002600053256

Data înregistrării **17.04.2002**

Data eliberării **16.02.2005**

Bolboceanu Adela, registrator de stat
Funcția, numele, prenumele persoanei care a eliberat certificatul

semnătura

CAMERA ÎNREGISTRĂRII DE STAT 109 L.Ș.

MD 0027040

F/COM/CC/23/02

Nr. CIF26-842.2020
Data: 13 Februarie 2020

CERTIFICAT
PRIVIND EXISTENTA CONTURILOR CURENTE

Prin prezentul, **Mobiasbanca - OTP Group S.A.**, codul băncii (BIC): **MOBBMD22**, confirmă că compania **TEHNOMEDICA S.R.L.** cod fiscal (IDNO) **1002600053256**, detine următoarele conturi curente la Mobiasbanca - OTP Group S.A., Sucursala. 26 Negruzzi:

1. **MDL - MD65MO2224ASV98310887100**
2. **EUR - MD06MO2224ASV98311097100**

L.Ş.

Numele, Prenumele si Semnătura
Director sucursalei „Gheorghe Mocanu"

Executor :Eduard Cilcic
Tel: 022-812-150

bd. Ștefan cel Mare și Sfînt 81A • MD-2012 Chișinău, Moldova • telefon: +373 22 256 456 • e-mail: info@mobiasbanca.md • www.mobiasbanca.md

LISTA FONDATORILOR
SRL TEHNOMEDICA

Fondator unic: Roibu Tatiana

IDNP: date cu caracter personal

Data prezentării 19.04.2022 13:56:22

Anexe la SNC
"Prezentarea situatiilor financiare"
Aprobat de Ministerul Finantelor
al Republicii Moldova

SITUAȚIILE FINANCIARE

pentru perioada 01.01.2021 - 31.12.2021

Entitatea: SRL "TEHNOMEDICA"
Cod CUIÎO: 37700778
Cod IDNO: 1002600053256

Sediul:
MD:
Raionul(municipiul): 102, DDF CENTRU
Cod CUATM: 0130, SEC.CENTRU
Strada:

Activitatea principală: G4646, Comert cu ridicata al produselor farmaceutice
Forma de proprietate: 16, Proprietate colectivă
Forma organizatorico-juridică: 530, Societăți cu răspundere limitată

Date de contact:
Telefon: 022601102
WEB:
E-mail:
Numele și coordonatele al contabilului-șef: Dl (dna) Popescu Ecaterina Tel. 069153407

Numărul mediu al salariaților în perioada de gestiune: 5 **persoane.**

Persoanele responsabile de semnarea situațiilor financiare* Popescu Ecaterina

Unitatea de măsură: leu

BILANȚUL

Anexa 1

la 31.12.2021

Nr. cpt.	Indicatori	Cod rd.	Sold la	
			Începutul perioadei de gestiune	Sfîrșitul perioadei de gestiune
1	2	3	4	5
	A C T I V			
	ACTIVE IMOBILIZATE **I. Imobilizări necorporale**			
	1. Imobilizări necorporale în curs de execuție	010	0	0
	2. Imobilizări necorporale în exploatare, total	020	319	255
	din care: 2.1. concesiuni, licențe și mărci	021	0	0
	2.2. drepturi de autor și titluri de protecție	022	0	0
	2.3. programe informatice	023	0	0
	2.4. alte imobilizări necorporale	024	319	255
	3. Fond comercial	030	0	0
	4. Avansuri acordate pentru imobilizări necorporale	040	2861138	3906847
	Total imobilizări necorporale (rd.010 + rd.020 + rd.030 + rd.040)	050	2861457	3907102
	II. Imobilizări corporale			
	1. Imobilizări corporale în curs de execuție	060	0	0
	2. Terenuri	070	0	0
	3. Mijloace fixe, total	080	2174915	1775960
	din care: 3.1. clădiri	081	1038156	929187
	3.2. construcții speciale	082	0	0
	3.3. mașini, utilaje și instalații tehnice	083	34609	18080
	3.4. mijloace de transport	084	1042950	806787

A.	3.5. inventar și mobilier	085	0	0
	3.6. alte mijloace fixe	086	59200	21906
	4. Resurse minerale	090	0	0
	5. Active biologice imobilizate	100	0	0
	6. Investiții imobiliare	110	0	0
	7. Avansuri acordate pentru imobilizări corporale	120	0	0
	Total imobilizări corporale (rd.060 + rd.070 + rd.080 + rd.090 + rd.100 + rd.110 + rd.120)	130	2174915	1775960
	III. Investiții financiare pe termen lung			
	1. Investiții financiare pe termen lung în părți neafiliate	140	0	0
	2. Investiții financiare pe termen lung în părți afiliate, total	150	0	0
	din care: 2.1. acțiuni și cote de participație deținute în părțile afiliate	151	0	0
	2.2 împrumuturi acordate părților afiliate	152	0	0
	2.3 împrumuturi acordate aferente intereselor de participare	153	0	0
	2.4 alte investiții financiare	154	0	0
	Total investiții financiare pe termen lung (rd.140 + rd.150)	160	0	0
	IV. Creanțe pe termen lung și alte active imobilizate			
	1. Creanțe comerciale pe termen lung	170	0	0
	2. Creanțe ale părților afiliate pe termen lung	180	0	0
	inclusiv: creanțe aferente intereselor de participare	181	0	0
	3. Alte creanțe pe termen lung	190	0	0
	4. Cheltuieli anticipate pe termen lung	200	0	0
	5. Alte active imobilizate	210	0	0
	Total creanțe pe termen lung și alte active imobilizate (rd.170 + rd.180 + rd.190 + rd.200 + rd.210)	220	0	0
	TOTAL ACTIVE IMOBILIZATE (rd.050 + rd.130 + rd.160 + rd.220)	230	5036372	5683062
B.	**ACTIVE CIRCULANTE** **I. Stocuri**			
	1. Materiale și obiecte de mică valoare și scurtă durată	240	4996	4996
	2. Active biologice circulante	250	0	0
	3. Producția în curs de execuție	260	0	0
	4. Produse și mărfuri	270	1326025	491017
	5. Avansuri acordate pentru stocuri	280	0	0
	Total stocuri (rd.240 + rd.250 + rd.260 + rd.270 + rd.280)	290	1331021	496013
	II. Creanțe curente și alte active circulante			
	1. Creanțe comerciale curente	300	1022910	2800290
	2. Creanțe ale părților afiliate curente	310	0	0
	inclusiv: creanțe aferente intereselor de participare	311	0	0
	3. Creanțe ale bugetului	320	6546	6546
	4. Creanțele ale personalului	330	0	0
	5. Alte creanțe curente	340	0	0
	6. Cheltuieli anticipate curente	350	13569	2114
	7. Alte active circulante	360	31297	
	Total creanțe curente și alte active circulante (rd.300 + rd.310 + rd.320 + rd.330 + rd.340 + rd.350 + rd.360)	370	1074322	2808950
	III. Investiții financiare curente			
	1. Investiții financiare curente în părți neafiliate	380	700000	0
	2. Investiții financiare curente în părți afiliate, total	390	0	0
	din care: 2.1. acțiuni și cote de participație deținute în părțile afiliate	391	0	0
	2.2. împrumuturi acordate părților afiliate	392	0	0
	2.3. împrumuturi acordate aferente intereselor de participare	393	0	0

	2.4. alte investiții financiare în părți afiliate	394	0	0
	Total investiții financiare curente (rd.380 + rd.390)	400	700000	0
	IV. Numerar și documente bănești	410	6916759	6867356
	TOTAL ACTIVE CIRCULANTE (rd.290 + rd.370 + rd.400 + rd.410)	420	10022102	10172319
	TOTAL ACTIVE (rd.230 + rd.420)	430	15058474	15855381
	P A S I V			
C.	**CAPITAL PROPRIU** **I. Capital social și neînregistrat**			
	1. Capital social	440	5400	5400
	2. Capital nevărsat	450	(0)	(0)
	3. Capital neînregistrat	460	0	0
	4. Capital retras	470	(0)	(0)
	5. Patrimoniul primit de la stat cu drept de proprietate	480	0	0
	Total capital social și neînregistrat (rd.440 + rd.450 + rd.460 + rd.470 + rd.480)	490	5400	5400
	II. Prime de capital	500	0	0
	III. Rezerve			
	1. Capital de rezervă	510	0	0
	2. Rezerve statutare	520	0	0
	3. Alte rezerve	530	0	0
	Total rezerve (rd.510 + rd.520 + rd.530)	540	0	0
	IV. Profit (pierdere)			
	1. Corecții ale rezultatelor anilor precedenți	550	X	0
	2. Profit nerepartizat (pierdere neacoperită) al anilor precedenți	560	14705486	12203358
	3. Profit net (pierdere netă) al perioadei de gestiune	570	X	2864668
	4. Profit utilizat al perioadei de gestiune	580	X	(0)
	Total profit (pierdere) (rd.550 + rd.560 + rd.570 + rd.580)	590	14705486	15068026
	V. Rezerve din reevaluare	600	0	0
	VI. Alte elemente de capital propriu	610	0	0
	TOTAL CAPITAL PROPRIU (rd.490 + rd.500 + rd.540 + rd.590 + rd.600 + rd.610)	620	14710886	15073426
D.	**DATORII PE TERMEN LUNG**			
	1. Credite bancare pe termen lung	630	0	0
	2. Împrumuturi pe termen lung	640	0	0
	din care: 2.1. împrumuturi din emisiunea de obligațiuni	641	0	0
	inclusiv: împrumuturi din emisiunea de obligațiuni convertibile	642	0	0
	2.2. alte împrumuturi pe termen lung	643	0	0
	3. Datorii comerciale pe termen lung	650	0	0
	4. Datorii față de părțile afiliate pe termen lung	660	0	0
	inclusiv: datorii aferente intereselor de participare	661	0	0
	5. Avansuri primite pe termen lung	670	0	0
	6. Venituri anticipate pe termen lung	680	0	0
	7. Alte datorii pe termen lung	690	0	0
	TOTAL DATORII PE TERMEN LUNG (rd.630 + rd.640 + rd.650 + rd.660 + rd.670 + rd.680 + rd.690)	700	0	0
	DATORII CURENTE			
	1. Credite bancare pe termen scurt	710	0	0

E.	2. Împrumuturi pe termen scurt, total	720	0	0
	din care: 2.1. împrumuturi din emisiunea de obligațiuni	721	0	0
	inclusiv: împrumuturi din emisiunea de obligațiuni convertibile	722	0	0
	2.2. alte împrumuturi pe termen scurt	723	0	0
	3. Datorii comerciale curente	730	149510	288048
	4. Datorii față de părțile afiliate curente	740	0	0
	inclusiv: datorii aferente intereselor de participare	741	0	0
	5. Avansuri primite curente	750	0	0
	6. Datorii față de personal	760	977	100
	7. Datorii privind asigurările sociale și medicale	770	0	0
	8. Datorii față de buget	780	197101	493807
	9. Datorii față de proprietari	790	0	0
	10. Venituri anticipate curente	800	0	0
	11. Alte datorii curente	810	0	0
	TOTAL DATORII CURENTE (rd.710 + rd.720 + rd.730 + rd.740 + rd.750 + rd.760 + rd.770 + rd.780 + rd.790 + rd.800 + rd.810)	820	347588	781955
F.	**PROVIZIOANE**			
	1. Provizioane pentru beneficiile angajaților	830	0	0
	2. Provizioane pentru garanții acordate cumpărătorilor/clienților	840	0	0
	3. Provizioane pentru impozite	850	0	0
	4. Alte provizioane	860	0	0
	TOTAL PROVIZIOANE (rd.830 + rd.840 + rd.850 + rd.860)	870	0	0
	TOTAL PASIVE (rd.620 + rd.700 + rd.820 + rd.870)	880	15058474	15855381

SITUAȚIA DE PROFIT ȘI PIERDERE

de la 01.01.2021 pînă la 31.12.2021

Anexa 2

Indicatori	Cod rd.	Perioada de gestiune	
		precedenta	curenta
1	2	3	4
Venituri din vînzări, total	010	16620028	21962759
din care: venituri din vînzarea produselor și mărfurilor	011	13778008	19347659
venituri din prestarea serviciilor și executarea lucrărilor	012	2842020	2615100
venituri din contracte de construcție	013	0	0
venituri din contracte de leasing	014	0	0
venituri din contracte de microfinanțare	015	0	0
alte venituri din vînzări	016	0	0
Costul vînzărilor, total	020	12527753	16833673
din care: valoarea contabilă a produselor și mărfurilor vîndute	021	11595535	16054470
costul serviciilor prestate și lucrărilor executate terților	022	932218	779203
costuri aferente contractelor de construcție	023	0	0
costuri aferente contractelor de leasing	024	0	0
costuri aferente contractelor de microfinanțare	025	0	0
alte costuri aferente vînzărilor	026	0	0
Profit brut (pierdere brută) (rd.010 - rd.020)	030	4092275	5129086
Alte venituri din activitatea operațională	040	986	1238
Cheltuieli de distribuire	050	0	
Cheltuieli administrative	060	1569273	1518335
Alte cheltuieli din activitatea operațională	070	17430	79468

Rezultatul din activitatea operațională: profit (pierdere) (rd.030 + rd.040 - rd.050 - rd.060 - rd.070)	080	2506558	3532521
Venituri financiare, total	090	1257613	365919
din care: venituri din interese de participare	091	0	0
inclusiv: veniturile obținute de la părțile afiliate	092	0	0
venituri din dobînzi	093	0	0
inclusiv: veniturile obținute de la părțile afiliate	094	0	0
venituri din alte investiții financiare pe termen lung	095	0	0
inclusiv: veniturile obținute de la părțile afiliate	096	0	0
venituri aferente ajustărilor de valoare privind investițiile financiare pe termen lung și curente	097	0	0
venituri din ieșirea investițiilor financiare	098	0	0
venituri aferente diferențelor de curs valutar și de sumă	099	1257613	365919
Cheltuieli financiare, total	100	666851	603812
din care: cheltuieli privind dobînzile	101	0	0
inclusiv: cheltuielile aferente părților afiliate	102	0	0
cheltuieli aferente ajustărilor de valoare privind investițiile financiare pe termen lung și curente	103	0	0
cheltuieli aferente ieșirii investițiilor financiare	104	0	0
cheltuieli aferente diferențelor de curs valutar și de sumă	105	666851	603812
Rezultatul: profit (pierdere) financiar(ă) (rd.090 - rd.100)	110	590762	-237893
Venituri cu active imobilizate și excepționale	120	0	0
Cheltuieli cu active imobilizate și excepționale	130	0	0
Rezultatul din operațiuni cu active imobilizate și excepționale: profit (pierdere) (rd.120 - rd.130)	140	0	0
Rezultatul din alte activități: profit (pierdere) (rd.110 + rd.140)	150	590762	-237893
Profit (pierdere) pînă la impozitare (rd.080 + rd.150)	160	3097320	3294628
Cheltuieli privind impozitul pe venit	170	410288	429960
Profit net (pierdere netă) al perioadei de gestiune (rd.160 - rd.170)	180	2687032	2864668

SITUAȚIA MODIFICĂRILOR CAPITALULUI PROPRIU

de la 01.01.2021 pînă la 31.12.2021

Anexa 3

Nr. d/o	Indicatori	Cod rd	Sold la începutul perioadei de gestiune	Majorări	Diminuări	Sold la sfîrșitul perioadei de gestiune
1	2	3	4	5	6	7
I.	**Capital social și neînregistrat**					
	1. Capital social	010	5400	0	0	5400
	2. Capital nevărsat	020	(0)	(0)	(0)	(0)
	3. Capital neînregistrat	030	0	0	0	0
	4. Capital retras	040	(0)	(0)	(0)	(0)
	5. Patrimoniul primit de la stat cu drept de proprietate	050	0	0	0	0
	Total capital social și neînregistrat (rd.010 + rd.020 + rd.030 + rd.040 + rd.050)	060	5400	0	0	5400
II.	**Prime de capital**	070	0	0	0	0
III.	**Rezerve**					
	1. Capital de rezervă	080	0	0	0	0
	2. Rezerve statutare	090	0	0	0	0
	3. Alte rezerve	100	0	0	0	0
	Total rezerve (rd.080 + rd.090 + rd.100)	110	0	0	0	0

IV.	**Profit (pierdere)**					
	1. Corecții ale rezultatelor anilor precedenți	120	X	0	0	0
	2. Profit nerepartizat (pierdere neacoperită) al anilor precedenți	130	14705486	0	2502128	12203358
	3. Profit net (pierdere netă) al perioadei de gestiune	140	X	2864668	0	2864668
	4. Profit utilizat al perioadei de gestiune	150	X	(0)	(0)	(0)
	Total profit (pierdere) (rd.120 + rd.130 + rd.140 + rd.150)	160	14705486	2864668	2502128	15068026
V.	**Rezerve din reevaluare**	170	0	0	0	0
VI.	**Alte elemente de capital propriu**	180	0	0	0	0
	Total capital propriu (rd.060 + rd.070 + rd.110 + rd.160 + rd.170 + rd.180)	190	14710886	2864668	2502128	15073426

SITUAŢIA FLUXURILOR DE NUMERAR

de la 01.01.2021 pînă la 31.12.2021

Anexa 4

Indicatori	Cod rd	Perioada de gestiune	
		precedentă	curentă
1	2	3	4
Fluxuri de numerar din activitatea operațională			
Încasări din vînzări	010	17211991	23444192
Plăți pentru stocuri și servicii procurate	020	13370873	18993827
Plăți către angajați și organe de asigurare socială și medicală	030	554000	456668
Dobînzi plătite	040	0	0
Plata impozitului pe venit	050	414542	331089
Alte încasări	060	2220519	1598942
Alte plăți	070	5025576	3293285
Fluxul net de numerar din activitatea operațională (rd.010 - rd.020 - rd.030 - rd.040 - rd.050 + rd.060 - rd.070)	080	67519	1968265
Fluxuri de numerar din activitatea de investiții			
Încasări din vînzarea activelor imobilizate	090	0	0
Plăți aferente intrărilor de active imobilizate	100	0	0
Dobînzi încasate	110	0	0
Dividende încasate	120	0	0
inclusiv: dividende încasate din străinătate	121		
Alte încasări (plăți)	130	0	0
Fluxul net de numerar din activitatea de investiții (rd.090 - rd.100 + rd.110 + rd.120 ± rd.130)	140	0	0
Fluxuri de numerar din activitatea financiară			
Încasări sub formă de credite și împrumuturi	150	630000	800000
Plăți aferente rambursării creditelor și împrumuturilor	160	830000	0
Dividende plătite	170	2019064	2512000
inclusiv: dividende plătite nerezidenților	171		
Încasări din operațiuni de capital	180	0	0
Alte încasări (plăți)	190	0	0
Fluxul net de numerar din activitatea financiară (rd.150 - rd.160 - rd.170 + rd.180 ± rd.190)	200	-2219064	-1712000
Fluxul net de numerar total (± rd.080 ± rd.140 ± rd.200)	210	-2151545	256265
Diferențe de curs valutar favorabile (nefavorabile)	220	401419	-305668
Sold de numerar la începutul perioadei de gestiune	230	8666885	6916759
Sold de numerar la sfîrșitul perioadei de gestiune (± rd.210 ± rd.220 + rd.230)	240	6916759	6867356

Documente atașate - Notă explicativă (fișierul pdf)

GUVERNUL REPUBLICII MOLDOVA

SERVICIUL FISCAL DE STAT

Portalul Guvernamental pentru afaceri

CERTIFICAT

privind lipsa sau existența restanțelor față de bugetul public național

Din / От: 28.02.2023

1 DATE DESPRE CONTRIBUABIL/ИНФОРМАЦИЯ О НАЛОГОПЛАТЕЛЬЩИКЕ

Codul fiscal/Numărul de identificare
Фискальный код/Идентификационный номер

1002600053256

Denumirea
Наименование

SOCIETATEA CU RĂSPUNDERE LIMITATĂ TEHNOMEDICA

2 ATESTAREA LIPSEI SAU EXISTENȚEI RESTANȚELOR CONFORM DATELOR SISTEMULUI INFORMAȚIONAL AUTOMATIZAT/ПОДТВЕРЖДЕНИЕ ОТСУТСТВИЯ ИЛИ НАЛИЧИЯ НЕДОИМКИ СОГЛАСНО ДАННЫХ ИНФОРМАЦИОННОЙ АВТОМАТИЗИРОВАННОЙ СИСТЕМЫ

La data emiterii prezentului certificat restanța față de bugetul public național constituie/На дату выдачи данной справки, недоимка перед национальным публичным бюджетом составляет

1,67 **lei**/лей

3 VALABIL PÂNĂ LA/ДЕЙСТВИТЕЛЕН ДО: 15.03.2023

Prezentul certificat este eliberat în temeiul Art. 131, alin. (5^3) din Codul fiscal nr. 1163/1997, în baza datelor furnizate de Serviciul Fiscal de Stat în Portalul Guvernamental al Antreprenorului/Сертификат выдан в соответствии со ст. 131, п. (5^3) Налогового кодекса №1163/1997, на основании данных, предоставленных Государственной налоговой службой на Портале Правительства Предпринимателя

Generat și semnat de Portalul Guvernamental al Antreprenorului (https://mcabinet.gov.md) la 28.02.2023 20:09:28

Prezentul certificat este semnat electronic în conformitate cu Legea nr. 124 din 19.05.2022 /
Сертификат подписан электронной подписью в соответствии с Законом № 124 от 19.05.2022

TEHNOMEDICA

str.Ciuflea, 38/1 MD-2001, mun. Chișinău, Moldova tel./fax: (022)601 102, 601 087
e-mail <tehnomedica_md@yahoo.com> <tehnomedicamd@gmail.com>

Către Centrul pentru Achiziții Publice Centralizate în Sănătate

În atenția Grupului de lucru
al COP nr.ocds-b3wdp1-MD-1676966027819,
ID: 21074202

Declarație privind disponibilitatea prezentării mostrelor

Prin prezenta, declarăm că vom prezenta mostre în decurs de 10 zile de la solicitarea autorității contractante pentru produsele oferite în cadrul licitației prenonate privind *achiziționarea dispozitivelor medicale (pansamente) conform Programului Național pentru combaterea maladiilor rare - ”Epidermoliza buloasă”, pentru anul 2023 (repetat).*

Cu respect,

Director Tatiana Roibu

TEHNOMEDICA

str.Ciuflea, 38/1 MD-2001, mun. Chișinău, Moldova tel./fax: (022)601 102, 601 087
e-mail <tehnomedica_md@yahoo.com> <tehnomedicamd@gmail.com>

Către Centrul pentru Achiziții Publice Centralizate în Sănătate

În atenția Grupului de lucru
al COP nr.ocds-b3wdp1-MD-1676966027819,
ID: 21074202

Declarație privind înregistrarea dispozitivelor medicale

Prin prezenta, declarăm că produsele oferite în cadrul procedurii prenotate sunt înregistrate în Registrul de Stat al Dispozitivelor Medicale a Agenției Medicamentului și Dispozitivelor Medicale.

DM000374561	PANSAMENT ABSORBANT ADEZIV PE BAZĂ DE SPUMĂ DE POLIURETAN SI SILICON, PENTRU CĂLCÂI	MEPILEX®	HEEL	288100	Suedia	MÖLNLYCKE HEALTH CARE AB	TEHNOMEDICA S.R.L.	Rg04-000229	27-09-2022

Dovada înregistrării dispozitivelor medicale se regăsește pe pagina web a Agenției Medicamentului și Dispozitivelor Medicale www.amdm.gov.md

Cu respect,

Director Tatiana Roibu

TEHNOMEDICA

str.Ciuflea, 38/1 MD-2001, mun. Chișinău, Moldova tel./fax: (022)601 102, 601 087
e-mail <tehnomedica_md@yahoo.com> <tehnomedicamd@gmail.com>

Către Centrul pentru Achiziții Publice Centralizate în Sănătate

În atenția Grupului de lucru
al COP nr.ocds-b3wdp1-MD-1676966027819,
ID: 21074202

Declarație privind termenul de valabilitate

Prin prezenta, declarăm că termenul de valabilitate pentru produsele oferite în cadrul procedurii prenonate privind *achiziționarea dispozitivelor medicale (pansamente) conform Programului Național pentru combaterea maladiilor rare - "Epidermoliza buloasă", pentru anul 2023 (repetat),* la momentul livrării va constitui nu mai puțin de 80% din termenul total al produsului.

Cu respect,

Director Tatiana Roibu

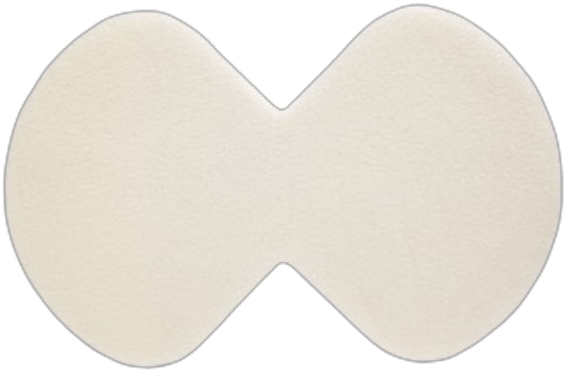
288100 Mepilex Heel

Soft silicone foam dressings

Product details

Size : 13cm x 20cm
Descriptive feature : Foam, Non-border, Soft silicone
Sterile : Sterile
Brand : Mepilex

Images



Delivered items

288100-02

Sales released in: Argentina, Australia, Austria, Belgium, Bolivia (Plurinational State of), Brazil, Canada, Chile, China, Colombia, Czechia, Denmark, Ecuador, Faroe Islands, Finland, Germany, Hong Kong, Hungary, India, Ireland, Italy, Japan, Kazakhstan, Korea (the Republic of), Luxembourg, Malaysia, Mexico, Netherlands, New Zealand, Norway, Peru, Poland, Portugal, Puerto Rico, Russian Federation, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, United Kingdom of Great Britain and Northern Ireland, United States of America
Country of origin: Finland
Shelf life: 3 years
Sterilization method: EtO
Production Responsibility: Mölnlycke Health Care Oy, PO Box 76, Saimaankatu 6, FI-50101 Mikkeli 10, Finland
Packing information: First packaging layer is a peel open sterile barrier, paper/plastic. Once opened the sterile barrier cannot be closed again. Second layer is a cardboard dispenser box. Third layer is a corrugated board transport box.
Is suitable for Tray: No

Packing level	Quantity	GS1 Code / UDI-DI	Width x Length x Height	Vol	Weight gross / net
Piece	1	7332430680822			

Packing level	Quantity	GS1 Code / UDI-DI	Width x Length x Height	Vol	Weight gross / net
Consumer pack	1	7332430718785			
Dispenser box	5	7323190271405			
Transport box	25	7323190271399	228x387x230 mm	20.3 dm3	1.4 / 0.4 kg
Pallet	1750	7323190271382	800x1200x1872 mm		

Material

Animal tissues : No
Human blood derivatives : No
Natural rubber latex : No
Medicinal substances : No
Phthalates : No
Polyvinyl chloride : No

Product Composition Non-bordered Foam Products

Product Component	Composition
Backing material	Polyurethane film
Wound pad	Polyurethane foam
Wound contact layer	Silicone
Protective release liner	Polyethylene film

Product Performance Non-bordered Foam Products

Characteristics	Test Method	Internal Test Method	Unit	Requirement	Product Performance
Free Swell Absorptive Capacity	EN 13726-1 part 3:2	T-1069	g/100 cm²	Not specified	77.9
Free Swell Absorptive Capacity	EN 13726-1 part 3:2	T-1069	g/g	Not specified	12.5
Fluid Handling Capacity	EN 13726-1 part 3:3	T-1068	g/10 cm²/24 h	Not specified	33.07
Absorbency	EN 13726-1 part 3:3	T-1068	g/10 cm²/24 h	Not specified	6.81
Moisture Vapour Transmission Rate (MVTR)	EN 13726-1 part 3:3	T-1068	g/10 cm²/24 h	Not specified	26.26

Mölnlycke Health Care AB, Box 13080, Gamlestadsvägen 3 C, SE-402 52 Göteborg, Sweden. Phone +46 31 722 30 00.

Characteristics	Test Method	Internal Test Method	Unit	Requirement	Product Performance
Waterproofness	EN 13726-3	T-1083	Pass/Fail	>500 mm H_2O for 300 s	Pass
Conformability-Extensibility, MD	EN 13726-4	T-1086	N/cm	Not specified	1.3
Conformability-Extensibility, CD	EN 13726-4	T-1086	N/cm	Not specified	1.0
Conformability-Permanent Set, MD	EN 13726-4	T-1086	%	Not specified	0.4
Conformability-Permanent Set, CD	EN 13726-4	T-1086	%	Not specified	0.3

Technical

Dimension

Dimension text	Dimension value
Product	13 cm x 20 cm
Product	5 in x 8 in

Classifications

Regulation type(s)	MDD Class IIb	CFR Class I	Locally Regulated	Locally Regulated
CE Certificate Number :	CE 01965			

Regulation type(s)	MDD Class IIb	CFR Class I	Locally Regulated	Locally Regulated
Intended use MDD :	Mepilex is intended for a wide range of exuding wounds such as leg and foot ulcers, pressure ulcers and traumatic wounds, e.g. skin tears and secondary healing wounds. Mepilex can be used as a protection of compromised and/or fragile skin and may also be used as part of a prophylactic therapy to help prevent skin damage, e.g. pressure ulcers.			
Intended Purpose :			Mepilex is intended for a wide range of exuding wounds such as leg and foot ulcers, pressure ulcers and traumatic wounds, e.g. skin tears and secondary healing wounds. Mepilex can be used as a protection of compromised and/or fragile skin and may also be used as part of a prophylactic therapy to help prevent skin damage, e.g. pressure ulcers.	Mepilex is intended for a wide range of exuding wounds such as leg and foot ulcers, pressure ulcers and traumatic wounds, e.g. skin tears and secondary healing wounds. Mepilex can be used as a protection of compromised and/or fragile skin and may also be used as part of a prophylactic therapy to help prevent skin damage, e.g. pressure ulcers.
Conformity Annexes :	II			
Measuring Function :	No			

КАТАЛОГ ПРОДУКЦИИ ПО УХОДУ ЗА РАНАМИ

БЕРЕЖНОЕ И ЭФФЕКТИВНОЕ ЛЕЧЕНИЕ

2013

MÖLNLYCKE HEALTH CARE

MÖLNLYCKE HEALTH CARE

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Safetac® TECHNOLOGY

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СОДЕРЖАНИЕ

MÖLNLYCKE HEALTH CARE

Mölnlycke Health Care является международной компанией, производящей изделия медицинского назначения. Центральный офис компании расположен в Швеции. Компания структурно поделена на две бизнес-группы: бизнес-группу хирургического белья и одежды для персонала операционной с брендами Barrier® и Biogel® и бизнес-группу перевязочных средств.
Бизнес-группа перевязочных средств создает, производит и представляет на рынке широкий спектр средств по уходу за ранами под такими торговыми марками, как Mepilex®, Mepore®, Mepitel®, Tubifast®. Отличительной чертой ряда перевязочных средств является применение в них запатентованной технологии покрытия из мягкого силикона Safetac®. Эти перевязочные средства максимально демонстрируют способности уменьшения травмы и боли при смене повязок.

НАША ФИЛОСОФИЯ

Уход за раной – это намного больше, чем просто смена повязок

Нельзя рассматривать уход за раной, как процесс наложения повязки и ее замены время от времени. То, что происходит под повязкой и в сознании пациента, является даже более существенным для процесса заживления.

Уход за раной должен поддерживать естественный процесс заживления раны

Понятие "рана" может быть определено, как дефект кожи и подлежащих тканей, вызванный многими причинами. Различные виды ран требуют различного ухода, и для того, чтобы достичь успеха в лечении раны, необходимо иметь хорошие знания о самом процессе заживления. Оптимальный уход за раной поддерживает естественный процесс заживления щадящим и одновременно эффективным способом.

Естественное заживление раны достигается только при целостном подходе к человеку

Хороший уход – это возможность проявить человеческое уважение к людям, нуждающимся в нем, окружить их заботой о здоровье пациента. Если пациент почувствует заботу и уверенность в профессиональном и прогрессивном уходе за раной, процесс выздоровления затронет пациента в целом.

Откройте для себя систему ухода за ранами Mölnlycke Health Care и прочтите об ассортименте:
www.molnlycke.com , www.molnlycke.ru

ПРОЦЕСС ЗАЖИВЛЕНИЯ РАН – ТРИ СТАДИИ

ВОСПАЛЕНИЕ

Стадия воспаления начинается сразу после нанесения раны. Главными составляющими этой стадии являются гемостаз (контроль кровотечения) и санация (уничтожение бактерий лейкоцитами). В острой ране воспаление длится три-четыре дня. В хронической ране данная стадия затягивается. Важно понимать, что воспаление является необходимой частью процесса заживления ран. Без стадии воспаления заживление невозможно.

РЕПАРАЦИЯ

Стадия репарации начинается одновременно с завершением очищения раны, в то время, когда стадия воспаления почти завершена. Целью этой стадии является воссоздание тканей, и она продолжается, пока рана не будет закрыта.

Вновь воссозданная ткань первоначально имеет розовый цвет, но затем краснеет, по мере формирования капилляров. Ткани приобретают блеск, "цвет мяса", появляются грануляции; отсюда термин "грануляционная ткань", по которой данная стадия иногда может называться.

СОЗРЕВАНИЕ

Стадия созревания, иногда называемая стадией ремоделирования, начинается с момента закрытия раны и продолжается до года и более. Рубец, формируемый в данный период, подвергается "реконструкции", потому что первоначально волокнистая структура рубца беспорядочна. Со временем волокна сближаются и структурируются.

Ткань рубца бледнеет, уплощается и становится более эластичной. Рубец стремится приблизиться к физическим характеристикам исходной ткани, но это невозможно. Ткань рубца никогда не станет такой же прочной; она достигнет лишь 80% от оригинальной.

ФАКТОРЫ, ВЛИЯЮЩИЕ НА ЗАЖИВЛЕНИЕ РАН

Существует много местных и системных факторов, оказывающих влияние на процесс заживления ран. Важно осознавать, что один или комбинация из нескольких факторов может приостановить процесс. Многие пациенты будут обладать одним или несколькими факторами, которые окажут влияние на процесс заживления раны.

Системные факторы

Недостаточное или неправильное питание
Недостаточная оксигенация
Некоторые виды лекарственной терапии
Некоторые сопутствующие заболевания
Возраст
Курение

Местные факторы

Недостаточное кровоснабжение
Инфицирование раны
Сухость раны
Отек
Некротическая ткань и инородные тела
Недостаточная температура в области раны
Боль

ВИДЫ РАН

ЧЕРНЫЕ, ЖЕЛТЫЕ И КРАСНЫЕ РАНЫ

Открытые раны могут выглядеть по-разному, в зависимости от стадии. Каждая стадия требует определенного режима применения перевязочных средств, и для каждой стадии ключевым является выбор атравматичной повязки.

ЧЕРНЫЕ РАНЫ

Черные раны содержат сухой струп или другие твердые некротические ткани (обычно имеют черный цвет, но могут быть желтыми, серыми, коричневыми и пр.). Подберите продукцию для лечения ран, которая поддерживает процессы очищения раневой поверхности.

Некроз/сухой струп различной окраски.

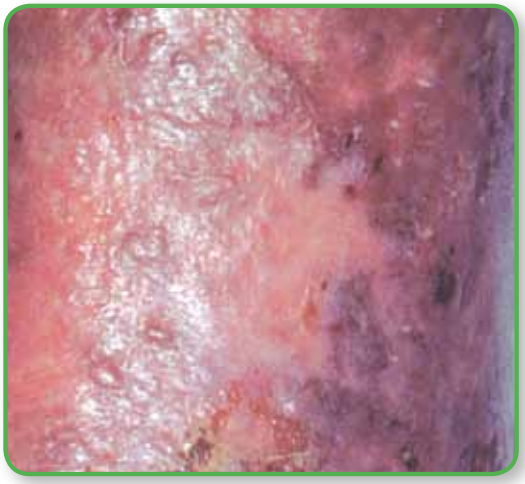
ЖЕЛТЫЕ РАНЫ

Желтые раны содержат жидкую некротическую ткань (отторгающиеся некротические массы). Рана может иметь количество экссудата от умеренного до большого. Подберите продукцию для лечения ран, которая обладает абсорбирующими свойствами, заполняет полость ран, защищает окружающую рану кожу и увлажняет рану.

Сухой желтый фибрин

КРАСНЫЕ РАНЫ

К категории красных ран относятся раны, находящиеся в стадии заживления и образования грануляций, с эпителизацией или без нее. Цвет раны может быть от бледно-розового до ярко-красного. Экссудация раны минимальная или отсутствует. Подберите продукцию для лечения ран, которая: увлажнит рану, защитит нежные вновь образованные ткани, заполнит полость раны, защитит окружающую кожу и обеспечит поддержание соответствующего температурного режима.



Легкоранимая эпителизирующаяся рана

Safetac® TECHNOLOGY

ПРОДУКЦИЯ ДЛЯ УХОДА ЗА РАНАМИ С ТЕХНОЛОГИЕЙ SAFETAC

Перевязочные средства с технологией Safetac® обеспечивают минимальное травмирование раны и снижение болевых ощущений пациента при смене повязок.

Ассортимент продукции Safetac®:
Mepitel®, Mepilex®, Mepilex® Ag, Mepilex® Border,
Mepilex® Border Sacrum, Mepilex® Lite, Mepilex® Border Lite,
Mepilex® Transfer, Mepiform®, Mepitac®.

ТЕХНОЛОГИЯ SAFETAC®

Safetac® – это запатентованная технология мягкого силиконового покрытия. Перевязочные средства с технологией Safetac® ярко продемонстрировали свое значительное преимущество, обеспечивая:

- Минимальное травмирование раны [2, 3, 4]
- Минимальное травмирование окружающей кожи [2, 3, 4]
- Минимальный болевой синдром [1,2, 3, 4]

Более того, применение перевязочных средств с технологией Safetac® (Mepitel®) продемонстрировало снижение затрат на лечение[4].

Safetac® TECHNOLOGY

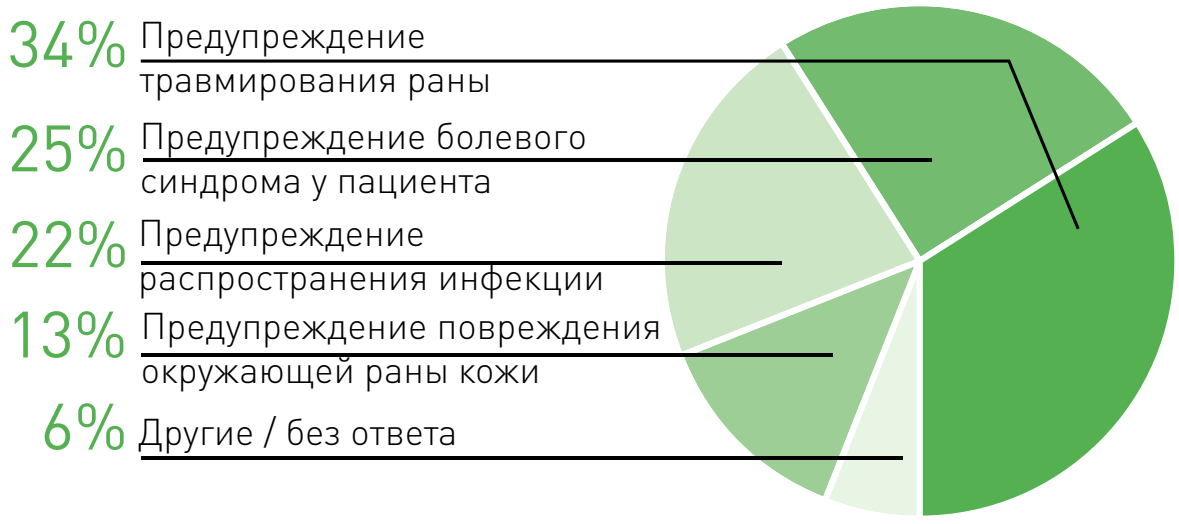
Ссылки:

1. Moffatt C J, et al. The European Wound Management Association (EWMA) position document on "Pain at wound dressing changes".
2. Dahström K K. A New Silicone Rubber Dressing used as a Temporary Dressing before Delayed Split Skin Grafting. Scand J Plast Reconstr. Hand surg.1995;29:325-327.
3. Platt A J, et al. A Comparative Study of Silicone Net Dressing and Paraffin Gauze Dressing in skin-Grafted Sites. Burns 1996;22:7:543-545.
4. Gotschall C S, et al. Prospective, Randomised Study of the Efficacy of Mepitel® on Children With Partial-Thickness Scalds. Journal of Burn Care & Rehabilitation, 1998;19:279-283.

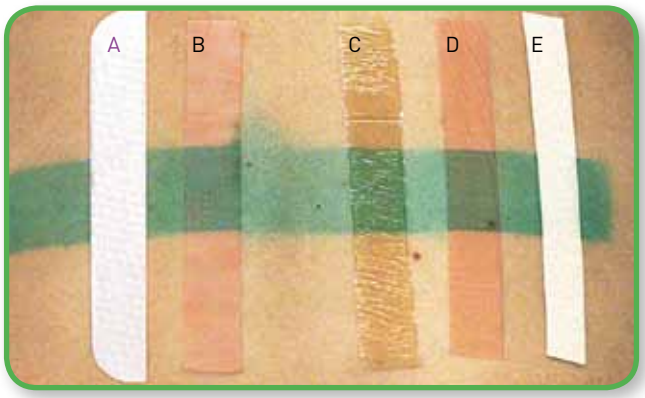
МЕЖДУНАРОДНОЕ ИССЛЕДОВАНИЕ ПО УХОДУ ЗА РАНАМИ

В одиннадцати странах Европы и Северной Америки было проведено исследование[1] с целью определить, насколько практикующие врачи обеспокоены проблемой боли и травмирования тканей при смене повязок, а также выяснить, на что они ориентируются при выборе способов и средств лечения ран у своих пациентов.
Из 14 657 розданных анкет были возвращены 3 918. Исследование показало, что главной заботой практикующих медицинских работников является предотвращение травмы и боли при смене повязок.

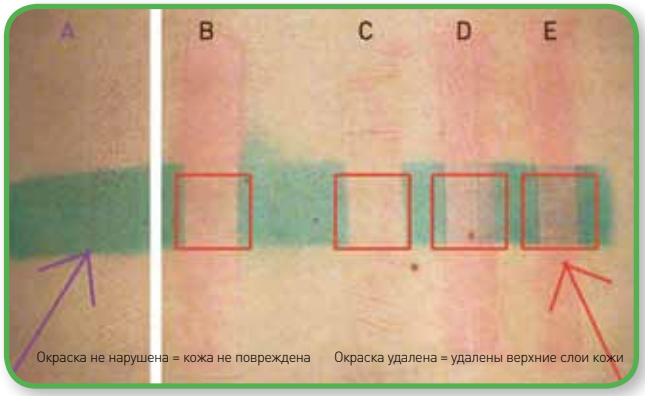
ОСНОВНЫЕ ТРЕБОВАНИЯ К СМЕНЕ ПОВЯЗОК



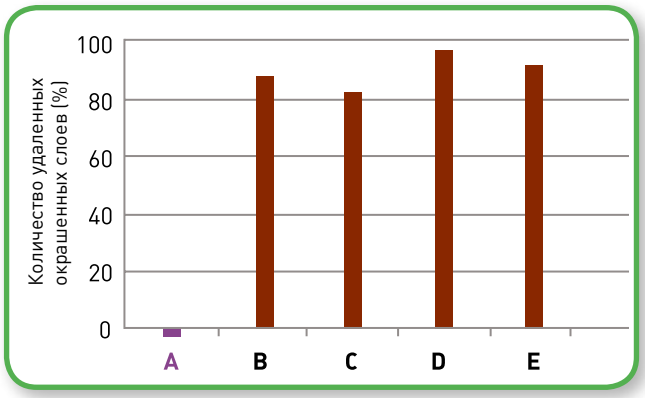
НАРУШЕНИЕ ЦЕЛОСТНОСТИ ЭПИДЕРМАЛЬНЫХ СЛОЕВ КОЖИ ПРИ СМЕНЕ ПОВЯЗОК



Перед началом исследования
A - Mepilex® Border, B - Biatain Adhesive®, C - DuoDerm ET®, D - Allevyn Adhesive®, E - Tielle®



После третьего снятия повязки
A - Mepilex® Border, B - Biatain Adhesive®, C - DuoDerm ET®, D - Allevyn Adhesive®, E - Tielle®



A - Mepilex® Border, B - Biatain Adhesive®, C - DuoDerm ET®, D - Allevyn Adhesive®, E - Tielle®

С целью продемонстрировать бережное прилипание Mepilex® Border в сравнении с адгезией других самоклеящихся повязок, было проведено исследование с привлечением 20 человек со здоровой кожей.

На окрашенную кожу были наклеены полоски различных самоклеящихся повязок. Все полоски снимались после 24-часовой экспозиции. Имело место 3 подобных цикла. После заключительного цикла оценивалось окрашивание кожи в местах адгезии.

Все исследуемые повязки, за исключением Mepilex®Border, удалили практически все окрашенные слои.

Полученные результаты свидетельствуют о том, что Mepilex®Border в котором применена технология Safetac, является достижением в области минимизации травмирования окружающей раны кожи при снятии повязки.

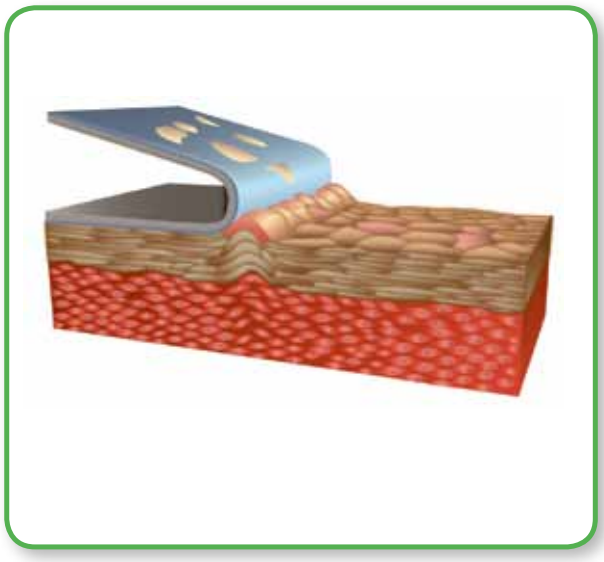
Приведенная диаграмма показывает количество окрашенных слоев кожи, удаленных различными самоклеящимися повязками после трех циклов наложения и снятия в сравнении с контрольным участком (средние значения).

Контрольный участок кожи оставался незакрытым, поэтому некоторые поверхностные слои эпидермиса стерлись в месте контроля, в то время, как под Mepilex® Border краситель остался неизмененным.

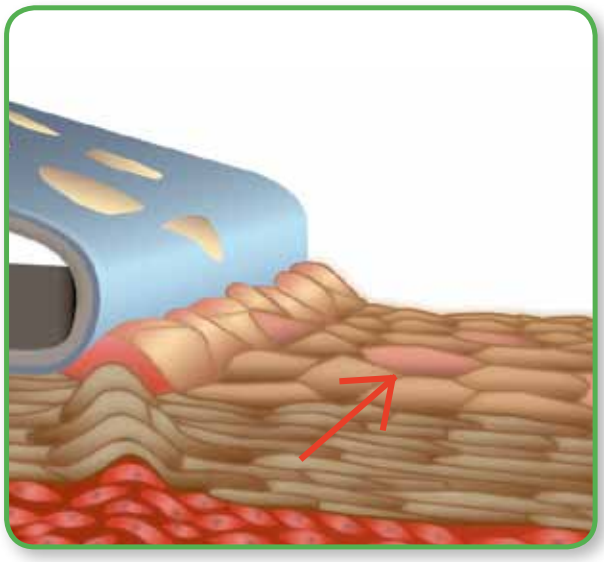
Ссылки:

1. Dykes P. et al. Effect of Adhesive Dressings on the Stratum Corneum of Normal Skin Journal of Wound Care, 2001;10:2:7-10.

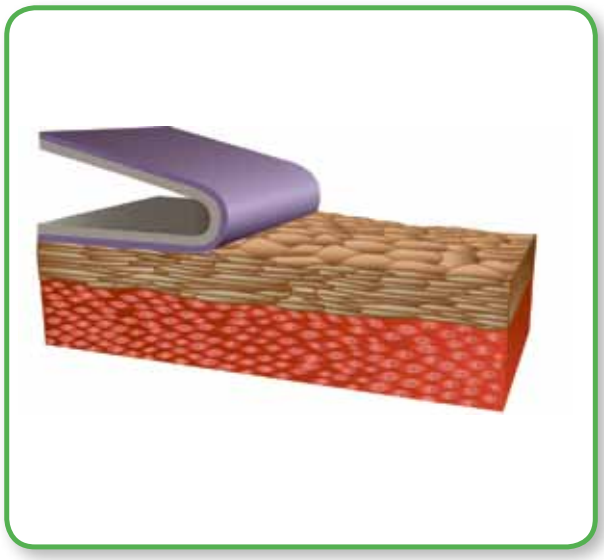
БЕРЕЖНАЯ ФИКСАЦИЯ НА ПОВЕРХНОСТИ КОЖИ ПЕРЕВЯЗОЧНЫХ СРЕДСТВ С ТЕХНОЛОГИЕЙ SAFETAC



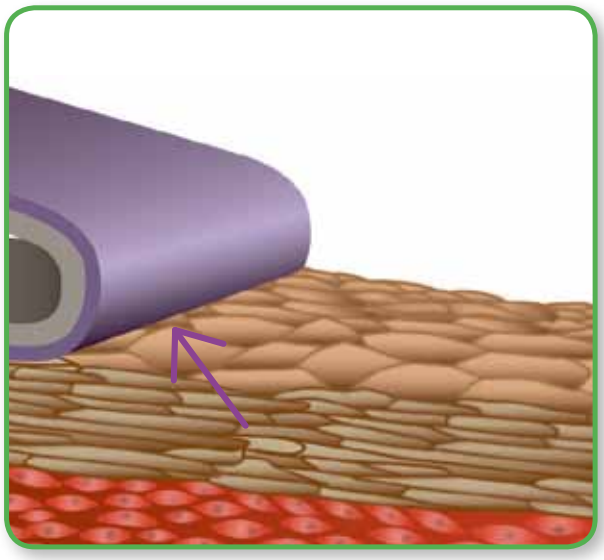
Традиционный адгезив



Отрыв клеток эпителия с поверхности кожи вокруг раны



Мягкий силиконовый адгезив с технологией Safetac®



Не происходит отрыва клеток эпителия
с поверхности кожи

Силиконовый слой Safetac® исключительно мягок и выстилает неровности поверхности, создавая обширную зону эффективного контакта с кожей. При приложении обычного усилия для снятия повязки, мягкий силиконовый слой перераспределяет его по обширной поверхности кожи под повязкой.

Благодаря этому, во время снятия повязки с технологией Safetac® порог отрыва эпидермиса и болевой порог не достигаются при той же силе адгезии. Это означает, что повреждение окружающей рану кожи и боль при смене повязки будут минимальными.

Подробнее о том, как повязки с технологией Safetac® сводят к минимуму травмирование раны и боль пациента читайте на сайте www.safetac.com, www.molnlycke.ru

MEPITEL – КОНТАКТНАЯ НАКЛАДКА НА РАНУ С МЯГКИМ СИЛИКОНОВЫМ ПОКРЫТИЕМ

Mepitel® минимизирует травмирование раны, прилежащих тканей и болевые ощущения пациента при смене повязок. Благодаря особенностям технологии Safetac® накладка Mepitel® мягко фиксируется на окружающих тканях, а не в области раны. Mepitel® может оставаться на месте в течение нескольких дней. При необходимости меняется только вторичная повязка, подобно Mesorb®, что обеспечивает непрерывность процесса заживления раны. Благодаря накладке Mepitel®, наружная повязка не прилипает к ране. Mepitel® можно использовать в сочетании с лекарственными препаратами для местного применения (например, антибиотиками).

МИНИМИЗИРУЕТ ТРАВМИРОВАНИЕ РАНЫ И БОЛЬ ПРИ СМЕНЕ ПОВЯЗОК

- Снижает дискомфорт у пациентов при смене повязок.
- Имеет положительные отзывы от пациентов.
- Процесс заживления раны больше не связан с повреждением тканей, окружающих рану, и вновь образовавшихся тканей.

БЕРЕЖНАЯ АДГЕЗИЯ

- Вторичную абсорбирующую повязку удобно накладывать, благодаря тому, что обе руки остаются свободными.
- Благодаря технологии Safetac®, накладка надежно закрепляется на окружающей рану коже, предотвращая мацерацию и снижая риск повреждения здоровой кожи.

ЭКОНОМИЧНОСТЬ

- Может оставаться на ране до двух недель (в зависимости от состояния раны), обеспечивая непрерывный и вместе с тем экономичный уход.
- Возможность замены только наружной повязки или использования лекарственных препаратов для местного применения без необходимости замены самой накладки Mepitel®.

MEPITEL НА ОЖОГЕ ВТОРОЙ СТЕПЕНИ

ФИСКАЦИЯ MEPITEL СЕТЧАТЫХ КОЖНЫХ ТРАНСПЛАНТАТОВ

ФИКСАЦИЯ И ЗАЩИТА РАЗРЫВА КОЖИ

MEPITEL НА МЕСТЕ ЗАБОРА КОЖНОГО ТРАНСПЛАНТАТА

АССОРТИМЕНТ MEPITEL

Арт. № см	Размер, в тов. кор.	Кол-во/ в трансп.кор.	Кол-во/
290510	5 x 7.5	10	50
290710	7.5 x 10	10	40
291010	10 x 18	10	70
292005	20 x 30	5	30

ОБЛАСТИ ПРИМЕНЕНИЯ

Широкий круг экссудирующих ран, таких, как:

- Ожоги второй степени
- Разрывы кожи
- Хирургические разрезы
- Диабетические язвы
- Венозные и артериальные язвы
- Участки кожных трансплантатов с тонкими окружающими тканями
- Царапины
- Ссадины
- Абсцессы
- Рваные раны
- Буллезный эпидермолизис (БЭ)

Дополнительная информация на сайтах:

www.safetac.com и www.molnlycke.com, www.molnlycke.ru

MEPILEX – АБСОРБИРУЮЩАЯ ПОВЯЗКА С ПОКРЫТИЕМ ИЗ МЯГКОГО СИЛИКОНА

Mepilex® сводит к минимуму болевые ощущения пациента и травмирование раны и окружающих тканей при смене повязок. Свойства покрытия Safetac® препятствуют прилипанию Mepilex® к влажному раневому ложу, одновременно бережно фиксируя повязку к окружающей рану коже, и обеспечивая легкое наложение вторичной повязки. Mepilex® эффективно впитывает, снижая риск возникновения мацерации до минимума. Mepilex® может быть нарезана по нужному размеру и форме, идеально подходит для использования на ранах различной формы и локализации.

МИНИМИЗИРУЕТ ТРАВМИРОВАНИЕ РАНЫ И БОЛЬ ПРИ СМЕНЕ ПОВЯЗОК

- Снижает дискомфорт при смене повязок.
- Имеет положительные отзывы от пациентов.
- Процесс заживления раны больше не связан с повреждением тканей, окружающих рану и вновь образовавшихся тканей.

БЕРЕЖНАЯ АДГЕЗИЯ

- Удобно использовать средства дополнительной фиксации, благодаря тому, что обе руки остаются свободными.
- Благодаря технологии Safetac®, повязка надежно закрепляется на окружающей рану коже, предотвращая мацерацию и снижая риск повреждения здоровой кожи.

ВЫСОКОЭФФЕКТИВНАЯ АБСОРБЦИЯ

- Экономия благодаря менее частой смене повязок.
- Действует даже под компрессионными повязками.

УДОБНАЯ ПОВЯЗКА, ИДЕАЛЬНО ПОВТОРЯЕТ КОНТУРЫ ТЕЛА

- Идеальна для применения в местах, труднодоступных для наложения повязок.

ЯЗВА ГОЛЕНИ

ДИАБЕТИЧЕСКАЯ ЯЗВА СТОПЫ

ПОВЕРХНОСТНЫЙ ОЖОГ

ПРИМЕНЕНИЕ MEPILEX НА ЯЗВЕ ГОЛЕНИ

АССОРТИМЕНТ MEPILEX

Арт. №	Размер, см	Кол-во/ в тов. кор.	Кол-во/ в трансп.кор.
294100	10 x 10	5	50
294200	10 x 20	5	45
294300	15 x 15	5	25
294400	20 x 20	5	20

АССОРТИМЕНТ MEPILEX HEEL

Арт. №	Размер, см	Кол-во/ в тов. кор.	Кол-во/ в трансп.кор.
288100	13 x 20	5	25
288300	15 x 22	5	30

ОБЛАСТИ ПРИМЕНЕНИЯ

Широкий спектр слабо и умеренно экссудирующих ран, таких, как:

- Язвы голени и стопы
- Пролежни
- Болезненные раны
- Травматические раны
- Раны на истонченной чувствительной коже
- Труднодоступные участки

MEPILEX HEEL:

- раны, пролежни и диабетические язвы в области пятки или лодыжки

Дополнительная информация на сайтах:

www.safetac.com и www.molnlycke.com, www.molnlycke.ru

MEPILEX BORDER – САМОКЛЕЯЩАЯСЯ АБСОРБИРУЮЩАЯ ПОВЯЗКА С ПОКРЫТИЕМ ИЗ МЯГКОГО СИЛИКОНА

Mepilex® Border минимизирует травмирование раны, прилежащих тканей и болевые ощущения пациента при смене повязок. Благодаря технологии Safetac®, Mepilex® Border мягко фиксируется к окружающим рану тканям, а не к самой ране. Mepilex® Border отлично удерживает жидкость, минимизируя риск развития мацерации тканей.

Повязка Mepilex® Border идеальна для участков, где требуется более нежная, по сравнению с другими, самоклеющаяся повязка.

МИНИМИЗИРУЕТ ТРАВМИРОВАНИЕ РАНЫ И БОЛЬ ПРИ СМЕНЕ ПОВЯЗОК

- Снижает дискомфорт при смене повязок.
- Имеет положительные отзывы от пациентов.
- Процесс заживления раны больше не связан с повреждением тканей, окружающих рану и вновь образовавшихся тканей.

БЕРЕЖНАЯ АДГЕЗИЯ

- Не требует дополнительной фиксации.
- Благодаря технологии Safetac®, обеспечивается надежная фиксация на окружающей рану коже, предотвращается мацерация тканей и снижается риск повреждения здоровой кожи.

ВЫСОКОЭФФЕКТИВНАЯ СИСТЕМА, КОНТРОЛИРУЮЩАЯ ДВИЖЕНИЕ ЖИДКОСТИ

- Экономия благодаря менее частой смене повязок.
- Может оставаться на одном месте в течение нескольких дней, справляясь с высоким уровнем экссудата.

ПРОЛЕЖНИ В ОБЛАСТИ КРЕСТЦА

ПРИМЕНЕНИЕ MEPILEX BORDER SACRUM НА КРЕСТЦОВОМ ПРОЛЕЖНЕ

ХИРУРГИЧЕСКИЙ РАЗРЕЗ

ЯЗВА ГОЛЕНИ

АССОРТИМЕНТ MEPILEX BORDER

Арт. №	Размер, см	Кол-во/ в тов. кор.	Кол-во/ в трансп.кор.
295200	7,5 x 7,5	5	70
295300	10 x 10	5	50
295400	15 x 15	5	50
295600	15 x 20	5	45

ХИРУРГИЧЕСКИЙ АССОРТИМЕНТ MEPILEX BORDER

295800	10 x 20	5	35
295900	10 x 30	5	25

MEPILEX BORDER SACRUM

282000	18 x 18	5	40
282400	23 x 23	5	25

ОБЛАСТИ ПРИМЕНЕНИЯ

Может применяться для широкого спектра слабо и сильно экссудирующих ран, таких, как:

- Пролежни
- Язвы голени и стопы
- Болезненные раны
- Травматические раны
- Раны на истонченной чувствительной коже
- Послеоперационные раны

Дополнительная информация на сайтах

www.safetac.com и www.molnlycke.com, www.molnlycke.ru

MEPILEX LITE – АБСОРБИРУЮЩАЯ ПОВЯЗКА С ПОКРЫТИЕМ ИЗ МЯГКОГО СИЛИКОНА

Mepilex® Lite минимизирует болевые ощущения пациента, а также травмирование раны и окружающих тканей при смене повязок. Благодаря технологии Safetac®, Mepilex® Lite бережно фиксируется на окружающих рану тканях, а не на самой ране.

Повязка Mepilex® Lite очень эргономична и удобна в применении. Она идеально подходит для мест, труднодоступных к наложению повязки.

МИНИМИЗИРУЕТ ТРАВМИРОВАНИЕ РАНЫ И БОЛЬ ПРИ СМЕНЕ ПОВЯЗОК

- Снижает дискомфорт при смене повязок.
- Имеет положительные отзывы от пациентов.
- Процесс заживления раны больше не связан с повреждением тканей, окружающих рану и вновь образовавшихся тканей.

БЕРЕЖНАЯ АДГЕЗИЯ

- Вторичную повязку удобно наложить, благодаря тому, что обе руки остаются свободными.
- Благодаря технологии Safetac®, надежно закрепляется на окружающей рану коже, предотвращая мацерацию тканей и снижая риск повреждения здоровой кожи.

УДОБНАЯ ПОВЯЗКА, ИДЕАЛЬНО ПОВТОРЯЕТ КОНТУРЫ ТЕЛА

- Идеальна для применения в местах, труднодоступных для наложения повязок.

ДИАБЕТИЧЕСКАЯ ЯЗВА СТОПЫ

MEPILEX LITE НА ДИАБЕТИЧЕСКОЙ ЯЗВЕ СТОПЫ

ЛУЧЕВОЙ ОЖОГ

ЯЗВА ГОЛЕНИ

АССОРТИМЕНТ MEPILEX LITE

Арт. №	Размер, см	Кол-во/ в тов. кор.	Кол-во/ в трансп.кор.
284000	6 x 8,5	5	70
284100	10 x 10	5	50
284300	15 x 15	5	50
284500	20 x 50	2	12

ОБЛАСТИ ПРИМЕНЕНИЯ

Может применяться для широкого спектра сухих или слабо экссудирующих ран, таких, как:

- Диабетические язвы стоп
- Кожные реакции на радиацию
- Язвы стоп
- Язвы голеней
- Пролежни
- Поверхностные ожоги
- Буллезный эпидермолизис (БЭ)
- Раны на истонченной и чувствительной коже

А также для защиты соска кормящей матери

Дополнительная информация на сайтах

www.safetac.com и www.molnlycke.com, www.molnlycke.ru

MEPILEX TRANSFER – ОТВОДЯЩАЯ ЭКССУДАТ ПОВЯЗКА С МЯГКИМ СИЛИКОНОВЫМ ПОКРЫТИЕМ

Mepilex® Transfer позволяет обеспечивать уход за ранами в местах, трудных для наложения повязок, а также за ранами с большим количеством экссудата. Мягкий силиконовый слой Safetac® выстилается вокруг краев раны, губчатая структура Mepilex® Transfer позволяет экссудату подниматься вертикально вверх во вторичную абсорбирующую повязку. Mepilex® Transfer сводит к минимуму травмирование раны и боль пациента и при смене повязок, предупреждает риск развития мацерации.

МИНИМИЗИРУЕТ ТРАВМИРОВАНИЕ РАНЫ И БОЛЬ ПРИ СМЕНЕ ПОВЯЗОК

- Снижает дискомфорт при смене повязок.
- Имеет положительные отзывы от пациентов.
- Процесс заживления раны больше не связан с повреждением тканей, окружающих рану и вновь образовавшихся тканей.

БЕРЕЖНАЯ АДГЕЗИЯ

- Благодаря технологии Safetac®, надежно фиксируется на окружающей рану коже, предотвращая мацерацию тканей и снижая риск повреждения здоровой кожи.

ЭКОНОМИЧНОСТЬ

- Может оставаться на одном месте в течение нескольких дней, обеспечивая непрерывное и вместе с тем экономичное лечение.
- Требуют замены только вторичные повязки, в то время как Mepilex® Transfer может оставаться на месте.

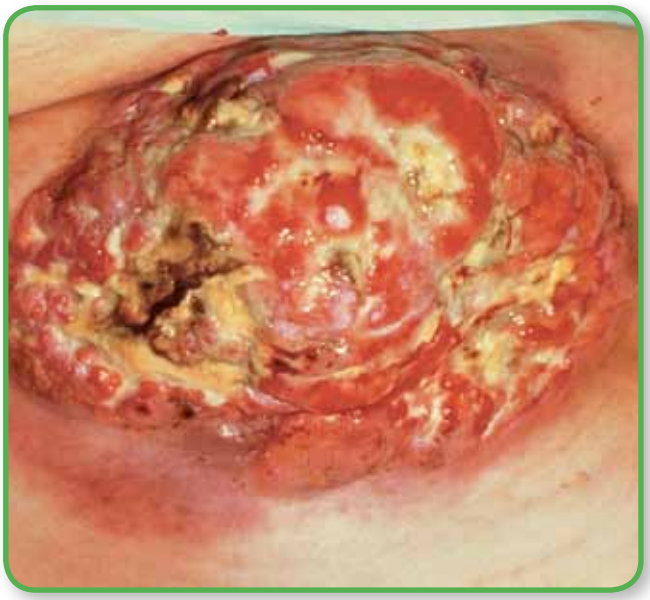
УДОБНАЯ ПОВЯЗКА, ИДЕАЛЬНО ПОВТОРЯЕТ КОНТУРЫ ТЕЛА

- Идеальна для применения в местах, труднодоступных для наложения повязок.

Mepilex® Transfer

ЛУЧЕВОЙ ОЖОГ (ПОДМЫШЕЧНАЯ ВПАДИНА)

ЯЗВА ГОЛЕНИ



ГРИБОВИДНЫЕ ЗЛОКАЧЕСТВЕННЫЕ НОВООБРАЗОВАНИЯ

ПРИМЕНЕНИЕ MEPILEX TRANSFER ДЛЯ ЛУЧЕВЫХ РАН (ПОД МОЛОЧНОЙ ЖЕЛЕЗОЙ)

АССОРТИМЕНТ MEPILEX TRANSFER

Арт. №	Размер, см	Кол-во/ в тов. кор.	Кол-во/ в трансп.кор.
294800	15 x 20	5	40
294502	20 x 50	4	24
294600	7,5 x 8,5	5	70
294700	10 x 12	5	50

ОБЛАСТИ ПРИМЕНЕНИЯ

Может применяться для широкого спектра сухих или слабо экссудирующих ран, таких, как:

- Грибовидные новообразования
- Буллезный эпидермолизис (БЭ)
- Кожные трансплантаты[1]
- Венозные язвы голеней

Ссылки: 1) Grocott P, The Palliative Management of Fungating Malignant Wounds, Educ Bkit. Wound Care Society. Vol. 8. No. 2. June 2001.

Дополнительная информация на сайтах

www.safetac.com и www.molnlycke.com, www.molnlycke.ru

MEPILEX AG АНТИБАКТЕРИАЛЬНАЯ ГУБЧАТАЯ ПОВЯЗКА

Mepilex® Ag -мягкая и очень удобная антибактериальная губчатая повязка, абсорбирующая экссудат и поддерживающая в ране влажную среду. Слой Safetac® герметично фиксирует повязку вокруг краев раны, предупреждая протекание экссудата, таким образом сводя к минимуму риск развития мацерации кожи вокруг раны. Благодаря поверхности Safetac® смена повязки проходит без повреждения раны или окружающей кожи и не вызывает у пациента дополнительные болевые ощущения.

Mepilex® Ag останавливает рост патогенной флоры уже через 30 минут с момента применения и продолжает снижать активность патогенных микроорганизмов в течении 7 дней. Mepilex® Ag также уменьшает запах из раны.

ПРЕИМУЩЕСТВА MEPILEX AG

- Минимизирует травмирование и боль при смене повязки
- Удобно использовать средства дополнительной фиксации, благодаря тому, что обе руки остаются свободными
- Подходит для примненения с компрессионными повязками
- Можно вырезать повязку нужной формы - по форме раны или для наложения в труднодоступных местах
- Обеспечивает комфорт пациента
- Может остаться на ране в течение нескольких дней, в зависимости от состояния раны
- Можно снять повязку и наложить снова без потери адгезивных свойств
- Низкий риск развития аллергии или раздражения кожи

МЕРЫ ПРЕДОСТОРОЖНОСТИ

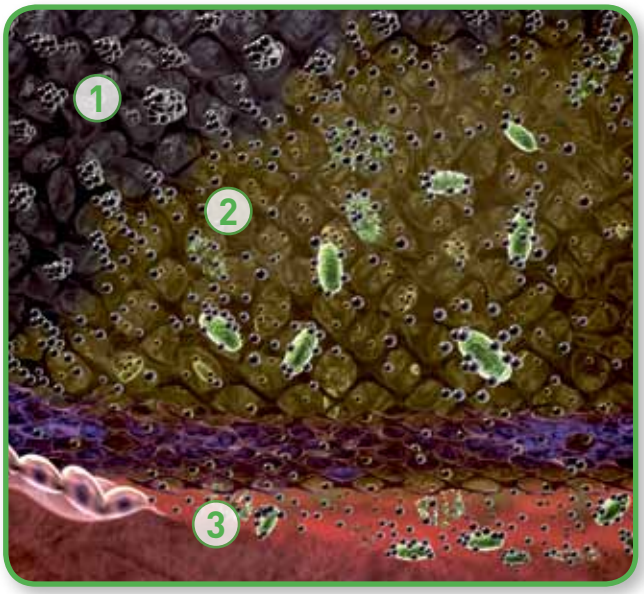
- Не используйте у пациентов с повышенной чувствительностью к серебру.
- Не используйте Mepilex® Ag во время лучевой терапии или во время обследований, таких как: ренгеноское, ультразвуковое или магнитеорезонансная томография.
- Не используйте Mepilex® Ag с такими антисептиками, как растворы гипохлорида или перекиси водорода.

*для микроорганизмов размером более 25 нм

[1]Taherinejad and Hamberg. Antimicrobial effect of a silver-containing foam dressing on a broad range of common wound pathogens. Poster publication, WUWHS 2008.

ЯЗВА СТОПЫ

ОЖОГИ



ЯЗВА ГОЛЕНИ

КАК РАБОТАЕТ MEPILEX AG

1. В сухой среде ионы серебра не высвобождаются.
2. Экссудат, абсорбированный повязкой, вступает в контакт с сульфатом серебра, ионы серебра активируются, и попадают в жидкость.
3. Постоянная концентрация ионов серебра в жидкой среде, равномерно распределяется как внутри самой повязки, так и под ней, непосредственно в ране, что обеспечивает стойкий бактерицидный эффект.

ОБЛАСТЬ ПРИМЕНЕНИЯ

Mepilex Ag предназначен для ран со слабым и умеренным количеством экссудата, таких, как язвы голени и стопы, пролежни и неглубокие ожоги.

АССОРТИМЕНТ MEPILEX AG

Арт. №	Размер см	Кол./ в тов. кор.	Кол./ в трансп. кор.
287110	10 x 10	5	70
287210	10 x 20	5	45
287310	15 x 15	5	35
287410	20 x 20	5	25
287510	20 x 50	2	12

Стерильная упаковка.

Дополнительная информация на сайтах

www.safetac.com и www.molnlycke.com, www.molnlycke.ru

MEPIFORM – САМОКЛЕЯЩАЯСЯ ПОВЯЗКА С ПОКРЫТИЕМ ИЗ МЯГКОГО СИЛИКОНА ДЛЯ УХОДА ЗА РУБЦАМИ

Mepiform® является тонкой и малозаметной повязкой для ухода за рубцами. Не требует дополнительной фиксации. Mepiform® хорошо повторяет контуры тела, подходит для ежедневного ношения. Повязка может быть снята с кожи без потери адгезивных свойств, что делает возможным ее повторное применение. Неоднократными клиническими исследованиями было показано, что при местном применении силикон оказывает положительное влияние на заживление рубцов[1,2].

ПРИМЕНЕНИЕ

- Убедиться в том, что рана полностью зажила.
- Убедиться в том, что все швы сняты и сшивные нити полностью удалены.

СКОЛЬКО ВРЕМЕНИ ЗАНИМАЕТ ЛЕЧЕНИЕ?

- Длительность применения варьируется.
- Обычно улучшение наступает через 4 недели применения. Лучших результатов можно достичь через 2-4 месяца применения.
- Mepiform® необходимо носить постоянно.
- Mepiform® можно снимать, если необходимо обработать рубец, а затем накладывать повторно.

НАСКОЛЬКО ДАВНИМ ДОЛЖЕН БЫТЬ РУБЕЦ, ЧТОБЫ ПОВЯЗКА MEPIFORM БЫЛА ЭФФЕКТИВНА?

- Для максимального эффекта применение Mepiform® следует начинать сразу после образования рубца.

Ссылки: 1) T.A. Mustoe, M.D., et al, International Clinical Recommendations on Scar Management, Special Topic, 2002.
2) J.I. Colom Maján, Journal of wound care, Vol. 15, No 5 (5), 2006.

ЗАЖИВШАЯ ХИРУРГИЧЕСКАЯ РАНА

КЕЛОИДНЫЙ РУБЕЦ

ГИПЕРТРОФИЧЕСКИЙ РУБЕЦ

MEPIFORM НА ГИПЕРТРОФИЧЕСКОМ РУБЦЕ

АССОРТИМЕНТ MEPIFORM

Арт. №	Размер, см	Кол-во/ в тов. кор.	Кол-во/ в трансп.кор.
293100	4 x 30	5	50
293200	5 x 7,5	5	25
293400	10 x 18	5	35

ОБЛАСТИ ПРИМЕНЕНИЯ

- Старые и новые, интенсивно окрашенные и выступающие над поверхностью тела гипертрофические и келоидные рубцы
- Закрытые раны, в тех случаях, когда есть риск образования гипертрофических и келоидных рубцов

Дополнительная информация на сайтах

www.safetac.com и www.molnlycke.com, www.molnlycke.ru

MEPITAC – ПЛАСТЫРЬ С МЯГКИМ СИЛИКОНОВЫМ ПОКРЫТИЕМ

Пластырь Mepitac® идеально повторяет контуры тела, прост в применении, легко удаляется с кожи. Технология Safetac® обеспечивает надежную фиксацию и атравматичное снятие. Если необходимо осмотреть поврежденный участок или переместить повязку, Mepitac® можно снять, а затем повторно использовать. Mepitac® – идеальное решение для фиксации повязок у пациентов с чувствительной или истонченной кожей. Mepitac® подходит для пациентов, которым необходимо многократно применять пластырь на одном и том же участке кожи, например, новорожденным или пациентам, находящимся на диализе.

МИНИМИЗИРУЕТ ТРАВМИРОВАНИЕ РАНЫ И БОЛЬ ПРИ СМЕНЕ ПОВЯЗОК

- Снижает дискомфорт при смене повязок.
- Имеет положительные отзывы от пациентов.

БЕРЕЖНАЯ АДГЕЗИЯ

- Атравматичен для раневого ложа и окружающей рану кожи при снятии повязки.

ЭКОНОМИЧНОСТЬ

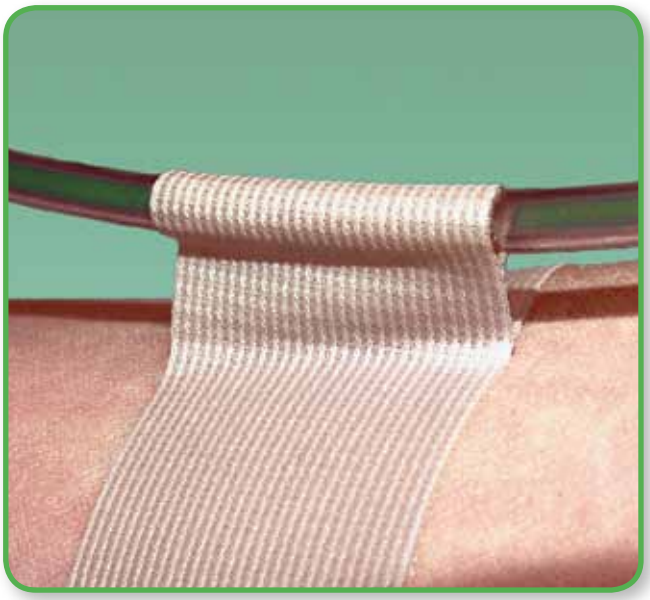
- Может оставаться на месте в течение нескольких дней. Он может быть снят с кожи без потери адгезивных свойств, что делает возможным его повторное применение, когда необходимо провести осмотр или сместить пластырь.

УДОБНЫЙ, ИДЕАЛЬНО ПОВТОРЯЕТ КОНТУРЫ ТЕЛА

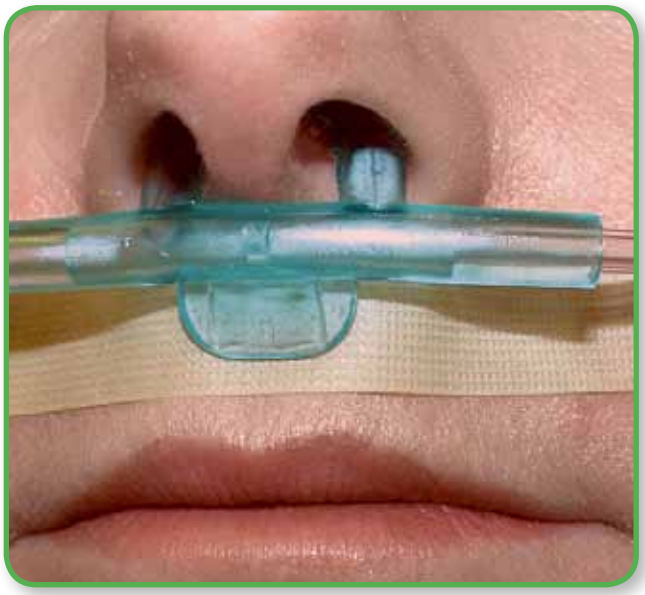
- Идеален для применения в местах, труднодоступных для наложения повязок.

MEPITAC ДЛЯ ПОВРЕЖДЕННОЙ И ЧУВСТВИТЕЛЬНОЙ КОЖИ

MEPITAC ДЛЯ ФИКСАЦИИ ПОВЯЗКИ НА РАНЕ



ПРИМЕНЕНИЕ MEPITAC ДЛЯ ФИКСАЦИИ ДРЕНАЖНЫХ ТРУБОК



ПРИМЕНЕНИЕ MEPITAC ДЛЯ ЗАЩИТЫ КОЖИ

АССОРТИМЕНТ MEPITAC

Арт. №	Размер, см	Кол-во/ в тов. кор.	Кол-во/ в трансп. кор.
298300	2 x 300	1	12
298400	4 x 150	1	12

Mepitac® создан для фиксации медицинских приспособлений, таких как дренажные трубки, зонды, электроды, внутривенные канюли и повязки. Кроме того, Mepitac® обеспечивает мягкую защиту кожи под подобными приспособлениями (например, полыми иглами).

ПРЕИМУЩЕСТВА MEPITAC:

- Атравматичен для раневого ложа и окружающей рану кожи при снятии повязки
- Хорошо повторяет контуры тела
- При снятии не оставляет следов адгезива
- Водонепроницаем
- Воздухопроницаем

Примечание: адгезивные свойства Mepitac® могут снизиться при применении в условиях повышенной влажности (например, в инкубаторах), либо у пациентов с лихорадкой или обильным потоотделением. Mepitac® не предназначен для фиксации артериальных катетеров и артериальных канюль.

Дополнительная информация на сайтах

www.safetac.com и www.molnlycke.com, www.molnlycke.ru

ТЕХНОЛОГИЯ SAFETAC. ВЫБОР ПЕРЕВЯЗОЧНЫХ СРЕДСТВ

Основное преимущество: Минимизирует болевые ощущения пациента, травмирование раны и окружающей рану кожи при снятии

MEPILEX® BORDER

- Легкая в использовании полноценная повязка (не требующая дополнительных средств фиксации);
- Хорошо абсорбирует и отлично удерживает экссудат, препятствует развитию мацерации;

MEPILEX® BORDER LITE

- Легкая в использовании полноценная повязка (не требующая дополнительных средств фиксации);
- Тонкая и удобная в применении, доступны повязки малого размера;

MEPITEL®

- Можно оставлять на одном месте в течение нескольких дней, при необходимости меняя вторичную повязку, что обеспечивает непрерывный и вместе с тем экономичный уход;
- Можно использовать в сочетании со средствами для местного применения;

MEPILEX®

- Забота о пациенте и высокий уровень комфорта;
- Остается на месте, не сползает;

MEPILEX® LITE

- Тонкая, удобная в использовании, обеспечивает высокий уровень комфорта для пациента;
- Остается на месте, не сползает;

MEPILEX® TRANSFER*

- Эффективно отводит экссудат;
- Удобна в применении, хорошо повторяет контуры тела, идеальна для мест, труднодоступных для наложения повязок.

* Требуется вторичная повязка (например, Mesorb)

УРОВЕНЬ ЭКССУДАЦИИ	НИЗКИЙ	СРЕДНИЙ	ВЫСОКИЙ

Safetac® TECHNOLOGY

СРЕДСТВА ДЛЯ ОЧИЩЕНИЯ РАН

Hypergel®

ПРЕИМУЩЕСТВА HYPERGEL®

- Размягчает и растворяет сухие некрозы
- Природный материал
- Легок в применении

КАК ДЕЙСТВУЕТ HYPERGEL

Нанести Hypergel® на область струпа, избегая попадания на окружающую здоровую кожу. Благодаря высокой концентрации хлорида натрия гель эффективно увлажняет и облегчает естественное отторжение некротической ткани. После удаления некротической ткани создаются благоприятные для заживления условия.

ОБЛАСТИ ПРИМЕНЕНИЯ

Hypergel® предназначен для размягчения и отторжения сухих некротических тканей

HYPERGEL – 20% РАСТВОР ХЛОРИДА НАТРИЯ В ФОРМЕ ГЕЛЯ

Высокая концентрация хлорида натрия эффективно увлажняет и облегчает естественное отторжение некротической ткани.

Hypergel® упакован стерильно в тубы

Артикул №	Количество / Размер	Туб в кор.	Туб в трансп. кор.
360500	5 г	10	40
361500	15 г	10	40

ЧЕРНАЯ СУХАЯ РАНА

Normlgel®

NORMLGEL – 0,9% РАСТВОР ХЛОРИДА НАТРИЯ В ФОРМЕ ГЕЛЯ

Физиологическая концентрация хлорида натрия эффективно увлажняет рану.

Normlgel® упакован стерильно в тубы

Артикул №	Количество / Размер	Туб в кор.	Туб в трансп. кор.
370500	5 г	10	40
371500	15 г	10	40

ПРЕИМУЩЕСТВА NORMLGEL

- Защищает чувствительные вновь образовавшиеся ткани
- Поддерживает влажную среду под повязкой
- Размягчает сухой фибрин

КАК ДЕЙСТВУЕТ NORMLGEL

Normlgel® следует нанести на рану. Normlgel® эффективно увлажняет рану, поддерживая, таким образом, влажную среду, благоприятную для заживления ран. Влажная среда поддерживает аутолитическое отторжение и защищает вновь образующуюся ткань.

ОБЛАСТИ ПРИМЕНЕНИЯ

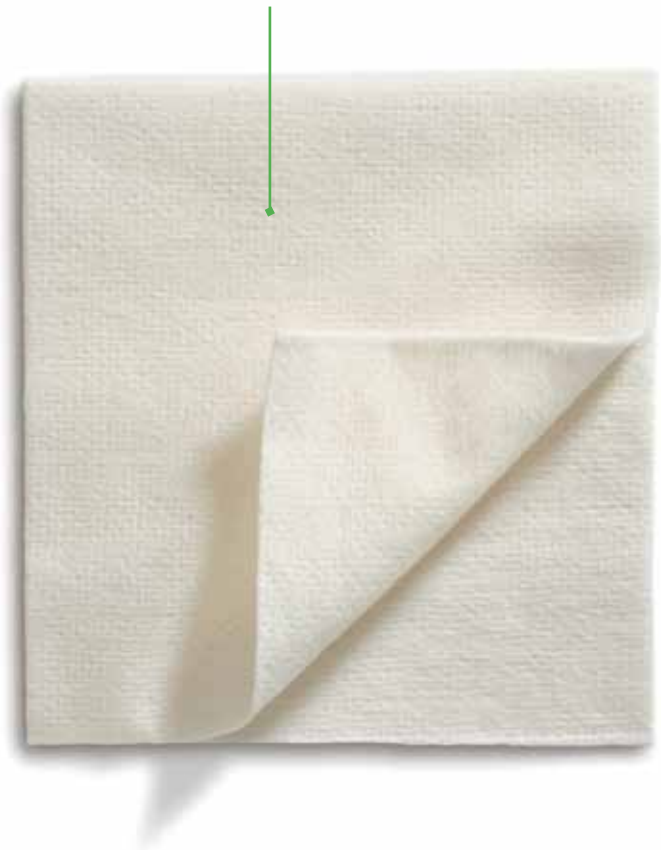
Normlgel® может применяться для лечения гранулирующих и открытых ран, таких, как:

- Пролежни
- Язвы голени
- Диабетические язвы
- Поверхностные ожоги
- Хирургические раны

СУХОЙ ЖЕЛТЫЙ ФИБРИН

Mesalt®

Нетканый абсорбент, пропитанный хлоридом натрия



MESALT – ОЧИЩАЮЩАЯ ПОВЯЗКА С ХЛОРИДОМ НАТРИЯ

Mesalt® эффективно стимулирует очищение сильно экссудирующих ран и инфицированных ран с выделениями.

Mesalt® упакован стерильно в индивидуальные пакеты

	Артикул №	Размер, см	Кол-во/ в тов. кор.	Кол-во/ в трансп. кор.
Mesalt®	285580	5 x 5	30	240
	285780	7,5 x 7,5	30	240
	286080	10 x 10	30	180
Лента Mesalt®	285280	2 x 100	10	80

ПРЕИМУЩЕСТВА MESALT

- Стимулирует отторжение некротических тканей
- Обладает антибактериальным эффектом
- Легка в применении

КАК ДЕЙСТВУЮТ ПОВЯЗКИ MESALT

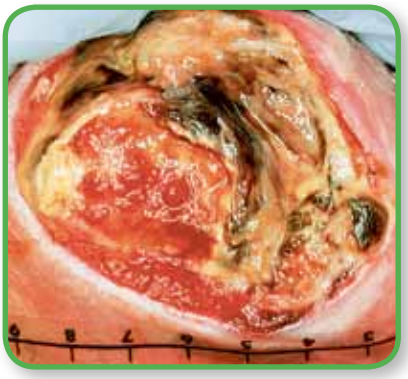
Выделения из раны приводят к освобождению хлорида натрия из повязки. Mesalt® эффективно стимулирует очищение ран в стадии воспаления, абсорбируя экссудат, бактерии и некротические ткани из раны, способствуя, таким образом, естественному заживлению раны.

ОБЛАСТИ ПРИМЕНЕНИЯ

Повязки Mesalt® предназначены для обработки сильно экссудирующих ран и ран с инфицированными выделениями в стадии воспаления, таких, как:

- Пролежни
- Хирургические раны

ЛЕНТА MESALT



ГРАНУЛИРУЮЩАЯ РАНА С ЭКССУДАТОМ

Melgisorb®

MELGISORB - АБСОРБИРУЮЩАЯ АЛЬГИНАТНАЯ ПОВЯЗКА

Melgisorb® представляет собой высокоабсорбирующую повязку для поверхностных и полостных ран.

ПРЕИМУЩЕСТВА MELGISORB

- Высокая абсорбция
- Не прилипает к влажной поверхности раны
- Подходит для полостных ран

КАК ДЕЙСТВУЕТ MELGISORB

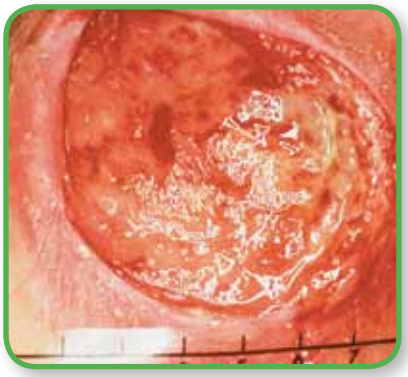
Melgisorb® способна абсорбировать большие количества экссудата. Альгинатное волокно, абсорбируя экссудат, образует мягкий влажный гель, создавая при этом влажную среду, благоприятную для заживления раны. Гель легко удаляется при промывании раны физиологическим раствором.

ОБЛАСТИ ПРИМЕНЕНИЯ

Melgisorb® может использоваться для обработки широкого спектра умеренно или сильно экссудирующих ран, таких, как:

- Пролежни
- Язвы голеней
- Диабетические язвы
- Донорские участки при аутотрансплантации
- Послеоперационные раны

MELGISORB ДЛЯ ПОЛОСТЕЙ



ГРАНУЛИРУЮЩАЯ РАНА С ЭКССУДАТОМ

АССОРТИМЕНТ Melgisorb®

Артикул №	Размер, см	Кол-во/ в тов. кор.	Кол-во/ в трансп. кор.
Плоская повязка			
250600	5 x 5	10	50
251100	10 x 10	10	50
251500	10 x 20	10	50
Повязка для полостей			
253000	2 x 32	5	50

ТРАДИЦИОННЫЕ ПЕРЕВЯЗОЧНЫЕ СРЕДСТВА

Компания Мёлнлике Хелс Кэа (Mölnlycke Health Care) является одной из крупнейших среди производителей средств по уходу за ранами. Наши передовые разработки, удобны в применении и включают такие средства, как Mepore®, Alldress® и Mepore® IV.

Alldress®

АБСОРБИРУЮЩАЯ, ПРОНИЦАЕМАЯ ДЛЯ ИСПАРЕНИЙ, САМОКЛЕЯЩАЯСЯ ПОВЯЗКА

Alldress® – самоклеящаяся абсорбирующая повязка, идеальная для широкого спектра слабо или умеренно экссудирующих ран, которая также используется в качестве вторичной повязки. Слой пленки поддерживает влажность среды, защищая рану от инфицирования и попадания воды.

ПРЕИМУЩЕСТВА ALLDRESS

- Слабое прилегание контактной сетки к ране
- Поддерживает влажную среду под повязкой
- Минимизирует риск возникновения мацерации тканей
- Можно принимать душ
- Защищает рану от попадания воды и загрязнений
- Защитная антибактериальная пленка
- Защитная бумага легко удаляется, обеспечивая удобное и асептическое наложение повязки
- Безопасный для кожи клейкий слой
- Высокоэффективная абсорбция

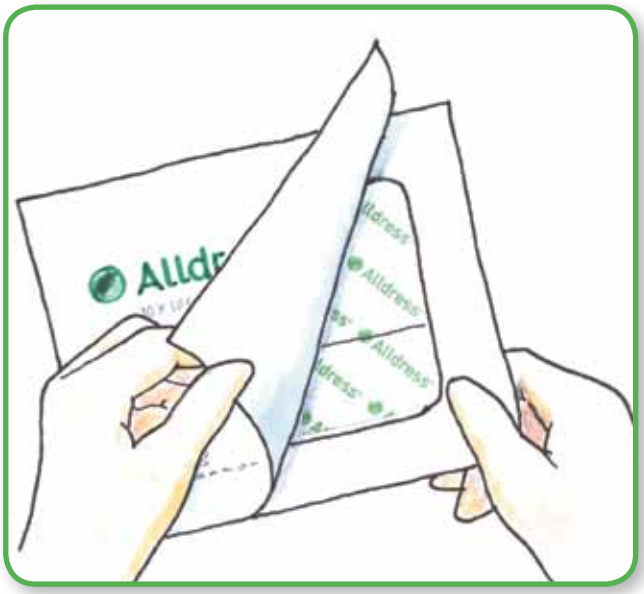
КАК ДЕЙСТВУЕТ ALLDRESS

Контактная поверхность Alldress® слабо прилипает к ране. Абсорбирующая прокладка впитывает экссудат и минимизирует риск развития мацерации окружающих кожных покровов.

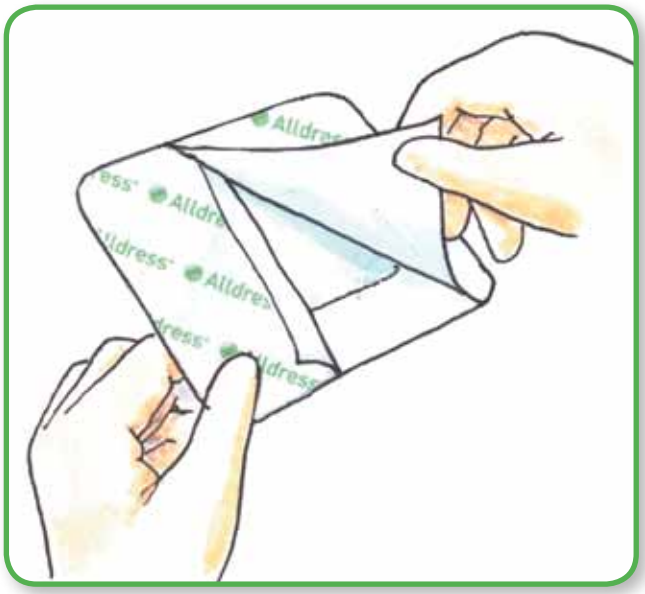
Мягкий адгезивный слой на водной основе надежно удерживает повязку на месте. Полупроницаемая пленка поддерживает влажность среды, способствуя заживлению раны, а также защищая рану от проникновения вирусов и бактерий. Кроме того, пленка препятствует проникновению экссудата через повязку.

Гладкая поверхность снижает трение о постельное белье и одежду, что обеспечивает более надежную фиксацию.

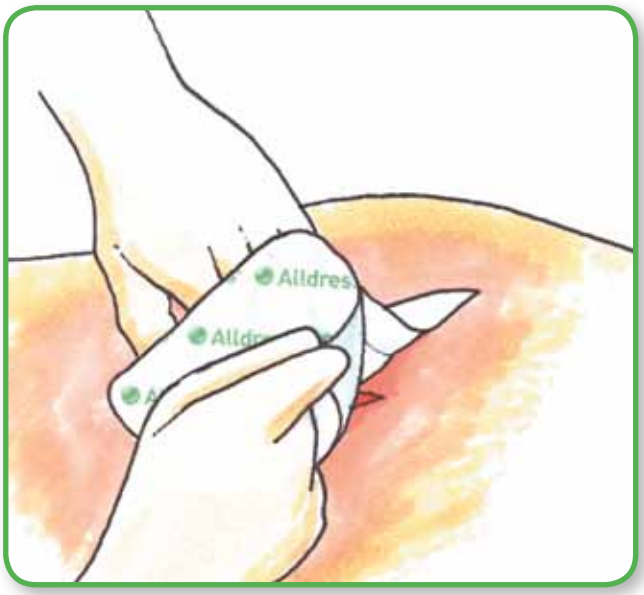
Alldress®



Вскройте упаковку и достаньте повязку.



Снимите первую половину защитной бумаги, чтобы открыть адгезивную поверхность.



Закрепите повязку на теле и аккуратно снимите вторую половину защитной бумаги. Плотно прижмите клейкие края повязки для лучшего прилипания. Не растягивайте повязку во время наложения.

Повязки Alldress® упакованы стерильно в индивидуальные пакеты

Арт. №	Размер, см	Размер прокладки, см	Кол-во/ в тов. кор.	Кол-во/ в трансп. кор.
265320	10 x 10	5 x 5	10	70
265340	15 x 15	10 x 10	10	100
265360	15 x 20	10 x 15	10	120

ОБЛАСТИ ПРИМЕНЕНИЯ

Alldress может применяться для ухода за широким спектром слабо или умеренно экссудирующих ран, например:

- Как первичная повязка для открытых и закрытых ран, таких как диабетические, венозные, пролежни, хирургические разрезы, рваные раны и поверхностные ожоги.
- Как вторичная повязка для открытых ран, совместно с:
  - гелями (например, Hypergel® и Normlgel®),
  - очищающими повязками (например, Mesalt®),
  - альгинатами (например, Melgisorb®)

Дополнительная информация на сайте:

www.molnlycke.com, www.molnlycke.ru

Mefix®

САМОКЛЕЯЩИЙСЯ МАТЕРИАЛ

Mefix® – идеальный фиксатор для повязок, тампонов, катетеров и канюль.

Обеспечивает надежную фиксацию, бережно приклеиваясь к коже.

ПРЕИМУЩЕСТВА MEFIX

- Адгезивный слой на водной основе без растворителей безопасен для кожи
- Предварительно размеченная защитная бумага обеспечивает удобство измерения и отреза
- Хорошо повторяет контуры тела
- Воздухопроницаем, предупреждает мацерацию тканей, обеспечивая комфортное использование
- Можно стерилизовать паром и EtO

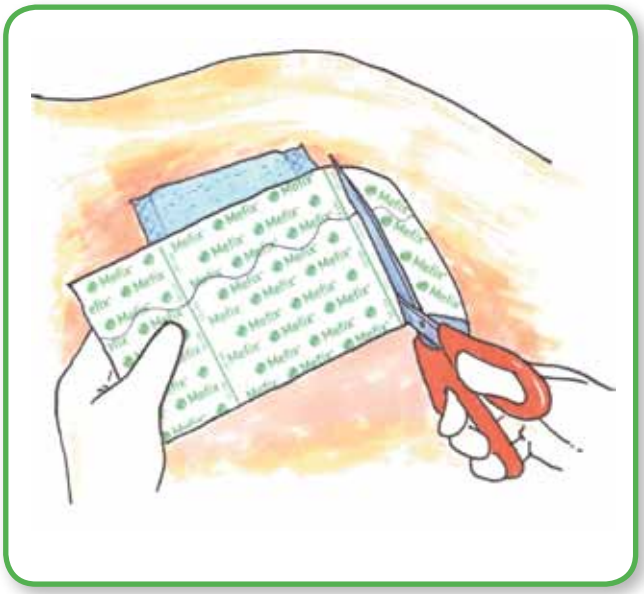
КАК ДЕЙСТВУЕТ MEFIX

Нетканая пористая структура материала делает его проницаемым для воздуха и испарений. Материал эластичен, хорошо повторяет контуры тела, не ограничивая движения и оставаясь при этом на месте.

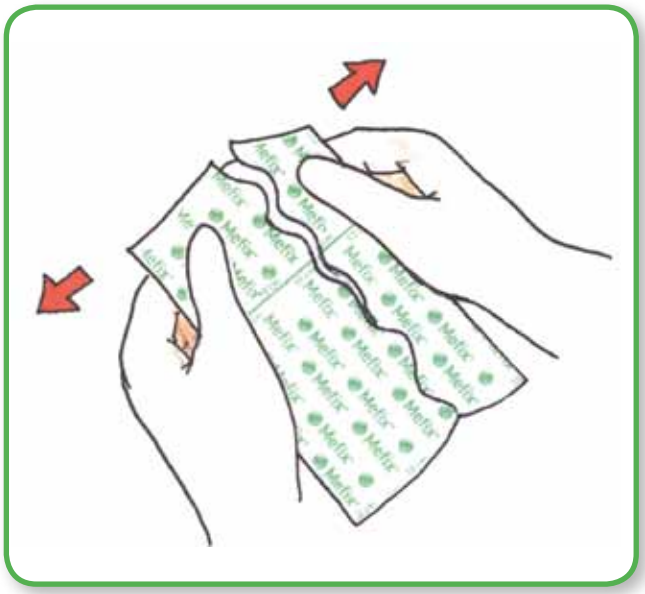
Материал не впитывает жидкости, и тем самым служит барьером, не пропускающим кровь и другие жидкости. Специально разработанный полиакриловый адгезив на водной основе не повреждает кожу, одновременно обеспечивая надежную фиксацию.

Благодаря перфорации на протяжении всего рулона, защитная бумага легко удаляется. Для удобного использования имеется разметка с интервалами в 10 см. Можно легко отрезать Mefix нужного размера и формы.

Mefix®



Вырезать по необходимому размеру.



Разделить защитную бумагу на две части, согнув Mefix. Удалить узкую часть.

Наложить на кожу часть повязки с открытым клейким слоем. Удалить оставшуюся защитную бумагу. С усилием разгладить Mefix для лучшего прилипания. Не растягивать Mefix во время наложения.

Mefix® доступен в нестерильных рулонах в индивидуальной упаковке.

Арт. №	Ширина, см	Упаковок/ в трансп. кор.
10-метровые рулоны		
310250	2.5	40
310500	5	40
311000	10	20
311500	15	22
312000	20	10
313000	30	12

ОБЛАСТИ ПРИМЕНЕНИЯ

Mefix® может широко применяться в тех случаях, когда необходима фиксация повязок, салфеток, тампонов, катетеров и канюль.

Дополнительная информация на сайте:

www.molnlycke.com, www.molnlycke.ru

Mepore®

САМОКЛЕЯЩАЯСЯ АБСОРБИРУЮЩАЯ ПОВЯЗКА

Воздухопроницаемая самоклеящаяся повязка Mepore® идеальна для сильно и умеренно экссудирующих ран. Безопасный для кожи полиакриловый клейкий слой на водной основе без растворителей обеспечивает надежную и бережную фиксацию.

ОБЛАСТИ ПРИМЕНЕНИЯ

Mepore® может использоваться для ухода за широким спектром слабо и умеренно экссудирующих ран, таких, как послеоперационные раны, поверхностные ожоги, порезы и ссадины.

ПРЕИМУЩЕСТВА MEPORE

- Адгезивный слой на водной основе безопасен для кожи
- Контактный слой прокладки слабо прилегает к ране
- Эластичная водоотталкивающая основа
- Защитная бумага легко удаляется, обеспечивая удобное и асептическое наложение
- Воздухопроницаема, предотвращает мацерацию тканей, комфортна в использовании
- Края округлой формы обеспечивают более надежную фиксацию (все размеры, до 9×15 см)

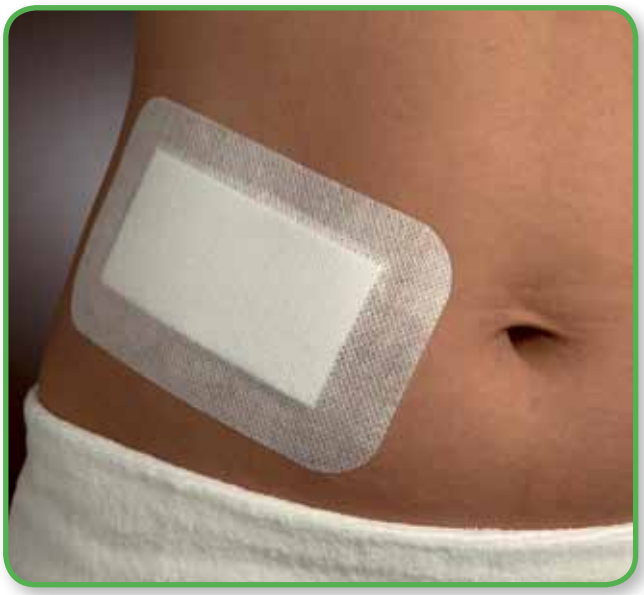
КАК ДЕЙСТВУЕТ MEPORE

Нетканая пористая структура повязки делает ее проницаемой для воздуха и испарений. Материал эластичен, хорошо повторяет контуры тела, не ограничивая движения и оставаясь при этом на месте. Материал не впитывает жидкости, и тем самым служит барьером, не пропускающим кровь и другие жидкости через себя. Специально разработанный полиакриловый адгезив не повреждает кожу, одновременно обеспечивая надежную фиксацию. Прокладка для раны абсорбирует умеренное количество экссудата, ее поверхность слабо прилипает к поверхности раны. Защитная бумага легко удаляется, обеспечивая удобное и асептическое наложение.

Mepore®

Вскрыть упаковку и достать повязку.

Приоткрыть с края повязки защитную бумагу и плотно приложить повязку адгезивной поверхностью для предварительного закрепления в нужном месте.



Наложить повязку на кожу без натяжения, аккуратно придерживая и удаляя оставшуюся защитную бумагу. Разгладить клейкие края повязки для ее прочного закрепления. Не натягивать повязку во время наложения!

Повязки Mepore® упакованы стерильно в индивидуальные пакеты

Арт. №	Размер, см	Размер прокладки см	Кол-во/ в тов. кор.	Кол-во/ в трансп. кор.
670800	6 x 7	3 x 4	60	480
670900	9 x 10	4.5 x 6	50	400
671000	9 x 15	4.5 x 10	50	400
671100	9 x 20	4.5 x 15	30	180
671200	9 x 25	4.5 x 20	30	210
671300	9 x 30	4.5 x 25	30	270

Mepore® также выпускается в нестерильных рулонах по 5 и 2 метра в индивидуальной упаковке

Арт. №	Ширина, см	Ширина прокладки см	Упаковок/ в трансп. кор.
5 м рулоны			
331900	4	1.5	24
332000	7	3	18
2 м рулоны			
331980	4	1.5	30
332080	7	3	21

Дополнительная информация на сайте:

www.molnlycke.com, www.molnlycke.ru

Mepore® Pro

ВОДОСТОЙКАЯ В УСЛОВИЯХ ДУША, САМОКЛЕЯЩАЯСЯ АБСОРБИРУЮЩАЯ ПОВЯЗКА

Mepore® Pro – самоклеящаяся абсорбирующая воздухопроницаемая повязка, с внешним пленочным покрытием, защищающим рану от попадания воды и инфицирования. Безопасный для кожи адгезивный слой на водной основе без растворителей обеспечивает надежную и бережную фиксацию.

ПРЕИМУЩЕСТВА MEPORE PRO

- Позволяет принимать душ
- Контактный слой прокладки слабо прилипает к ране
- Защищает рану от воды и внешнего загрязнения
- Внешняя пленка защищает от вирусов и бактерий
- Оптимальная абсорбция
- Защитная бумага легко удаляется, обеспечивая удобное и асептическое наложение
- Проницаема для испарений
- Скользит по поверхности одежды и постельного белья
- Безопасный для кожи адгезивный слой на водной основе
- Края округлой формы обеспечивают более надежную фиксацию (все размеры, до 9×15 см)

КАК ДЕЙСТВУЕТ MEPORE PRO

Защитная пленка позволяет принимать душ, защищает рану от воды и загрязнений. Защищает белье и одежду от попадания крови и экссудата раны. Повязка обеспечивает оптимальный баланс влаги в области раны, благодаря высокой впитывающей способности прокладки и эффективному испарению.

Специально разработанный полиакриловый адгезив обеспечивает бережную, и вместе с тем надежную фиксацию повязки. Несложному наложению повязки способствует также прочное наружное ламинирование пленкой.

Mepore® Pro

Вскрыть упаковку и достать повязку.

Приоткрыть с края повязки защитную бумагу и плотно приложить повязку адгезивной поверхностью для предварительного закрепления в нужном месте.

Наложить повязку на кожу без натяжения, аккуратно придерживая и удаляя оставшуюся защитную бумагу. Разгладить клейкие края повязки для ее прочного закрепления. Не натягивать повязку во время наложения!

Повязки Mepore® Pro упакованы стерильно в индивидуальные пакеты

Арт. №	Размер, см	Размер прокладки см	Кол-во/ в тов. кор.	Кол-во/ в трансп. кор.
670820	6 x 7	3 x 4	60	480
670920	9 x 10	4.5 x 6	40	320
671020	9 x 15	4.5 x 10	40	320
671120	9 x 20	4.5 x 15	30	180
671220	9 x 25	4.5 x 20	30	210
671320	9 x 30	4.5 x 25	30	270

ОБЛАСТИ ПРИМЕНЕНИЯ

Mepore® Pro может использоваться для ухода за широким спектром слабо и умеренно экссудирующих ран, таких, как послеоперационные раны, поверхностные ожоги, порезы и ссадины.

Дополнительная информация на сайте:

www.molnlycke.com, www.molnlycke.ru

Mepore® IV

ПРОЗРАЧНАЯ ВОЗДУХОПРОНИЦАЕМАЯ ПЛЕНОЧНАЯ ПОВЯЗКА С Y-ОБРАЗНЫМ РАЗРЕЗОМ

Прозрачная самоклеящаяся повязка Mepore® IV идеальна для фиксации интраваскулярных устройств, таких, как, например, IV катетеры. Техника наложения Mepore® IV проста в применении.

ПРЕИМУЩЕСТВА MEPORE IV

- Надежная фиксация
- Безопасный для кожи адгезив
- Нетканое укрепление для максимальной прочности
- Воздухопроницаемость
- Возможность визуального контроля без снятия повязки, через прозрачную часть повязки
- Точно повторяет контуры тела
- Пленка, защищающая от вирусов и бактерий
- Водонепроницаемость
- Легко накладывается, даже в перчатках

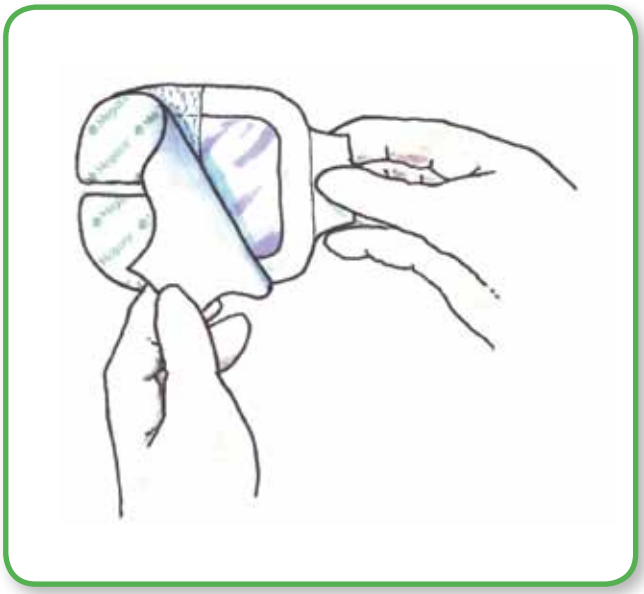
КАК ДЕЙСТВУЕТ MEPORE IV

Mepore® IV обеспечивает надежную и эластичную фиксацию интраваскулярных устройств. Прозрачная пленка является барьером для выделений и предотвращает проникновение вирусов и бактерий извне. Благодаря высокой проницаемости для испарений, Mepore® IV позволяет избытку влаги испаряться с поверхности кожи. Нетканый укрепляющий материал обеспечивает прочность и надежность фиксации.

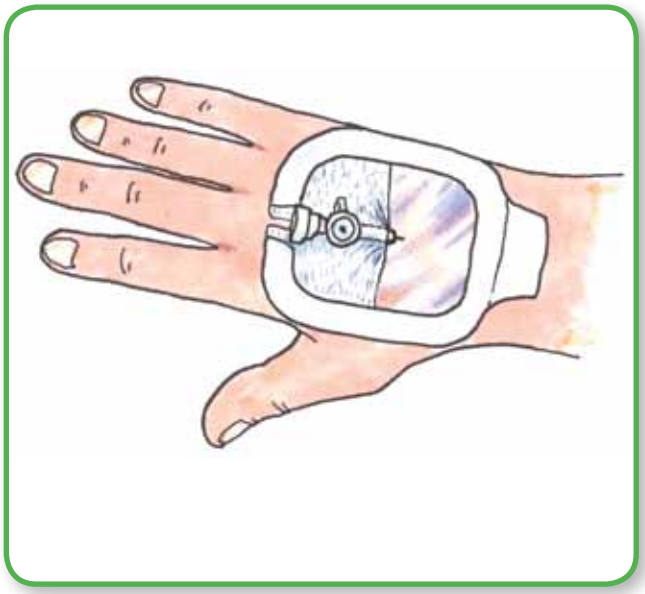
Специально разработанный полиакриловый адгезив слой не повреждает кожу, одновременно обеспечивая надежную фиксацию.

Система наложения с защитным каркасом, бумажной рамкой и разного размера боковыми стикерами обеспечивает простое и удобное наложение.

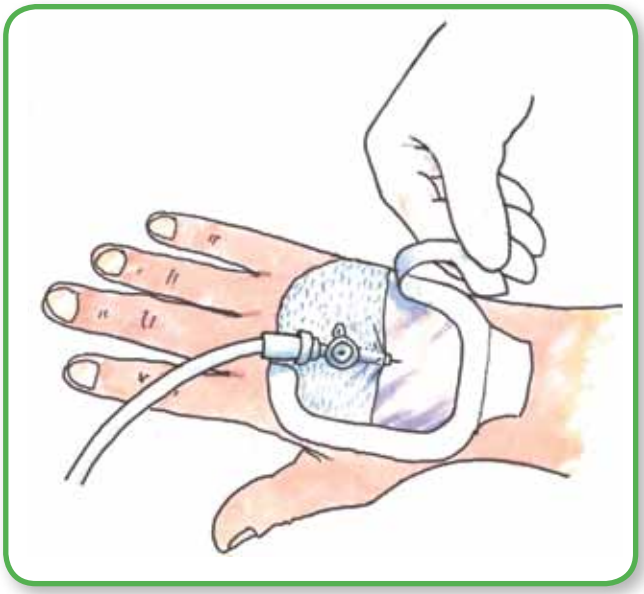
Mepore® IV



Вскройте упаковку и достаньте повязку. Снимите защитную бумагу, придерживая повязку за боковые стикеры.



Перед наложением убедитесь, что кожа очищена и просушена. Расположите повязку вокруг катетера. Удостоверьтесь, что катетер закрыт прозрачной пленкой.



Снимите бумажную рамку. Наложите повязку и осторожно разгладьте ее по поверхности кожи. Затем удалите боковые стикеры. Не растягивайте повязку во время наложения.

Повязки Mepore® IV упакованы стерильно в индивидуальные пакеты

Арт. №	Размер, см	Кол-во/ в тов. кор.	Кол-во/ в трансп. кор.
274000	5.5 x 5	100	600
274200	8 x 9	70	210
274400	10 x 11	70	210

ОБЛАСТИ ПРИМЕНЕНИЯ

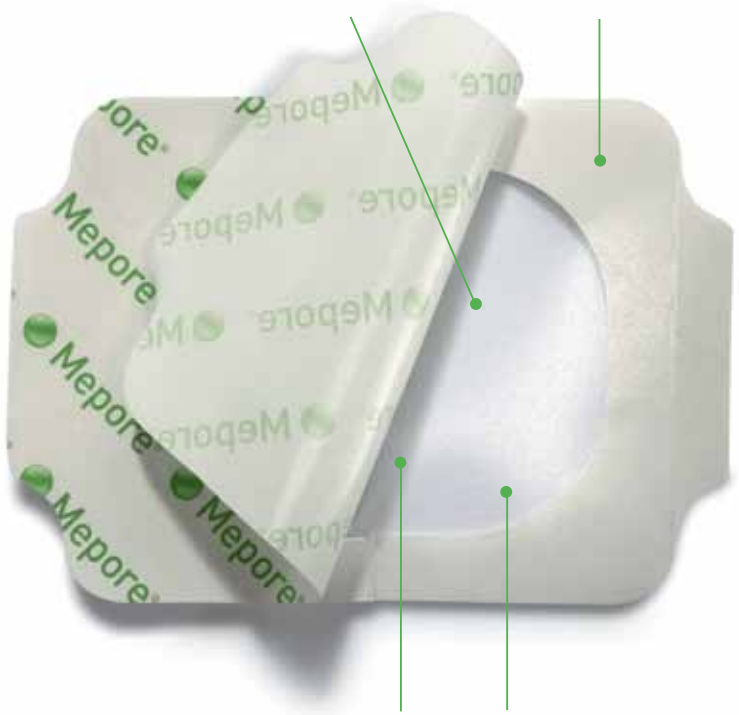
Mepore® IV предназначен для фиксации интраваскулярных устройств, таких, как:

- IV катетеры
- Периферические катетеры
- Центральные катетеры
- Педиатрические катетеры

Дополнительная информация на сайте:

www.molnlycke.com, www.molnlycke.ru

Mepore® Film



ВОЗДУХОПРОНИЦАЕМАЯ ПРОЗРАЧНАЯ САМОКЛЕЯЩАЯСЯ ПЛЕНОЧНАЯ ПОВЯЗКА

Прозрачная самоклеящаяся пленочная повязка Mepore® Film идеальна для применения, как в качестве наружной повязки, так и в качестве первичной повязки для широкого спектра чистых ран. Система наложения Mepore® Film проста и удобна в применении.

ПРЕИМУЩЕСТВА MEPORE FILM

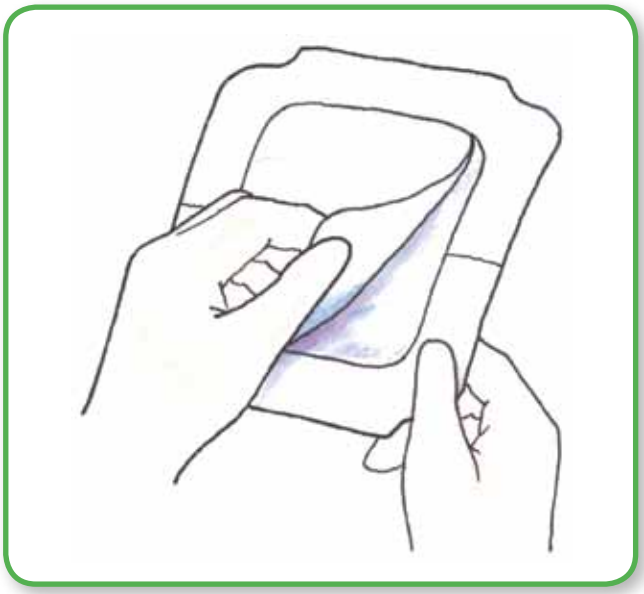
- Хорошая воздухо-проницаемость
- Легко накладывается, даже при использовании перчаток
- Ограничивает риск повреждения вновь образовавшейся ткани
- Точно повторяет контуры тела
- Безопасный для кожи клейкий слой
- Надежная фиксация
- Поддерживает под повязкой влажную среду
- Создает барьер от протекания, защищает от проникновения вирусов и бактерий
- Непроницаема для жидкостей

КАК ДЕЙСТВУЕТ MEPORE FILM

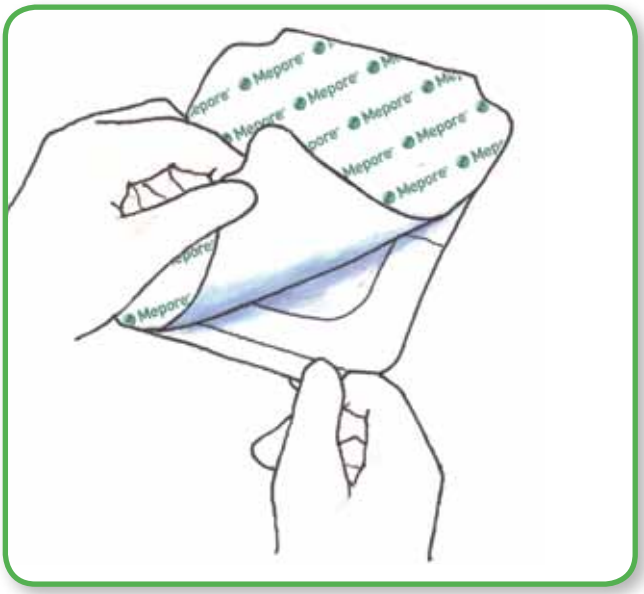
Mepore® Film обеспечивает прозрачное эластичное покрытие и защищает рану, выполняя неровности поверхности, повторяя контуры тела. Повязка является барьером для выделений и предотвращает проникновение вирусов и бактерий извне.

Mepore® Film поддерживает оптимальную влажную среду в ране, и благодаря его паропроницаемости позволяет избытку влаги испаряться с поверхности раны и окружающей кожи.

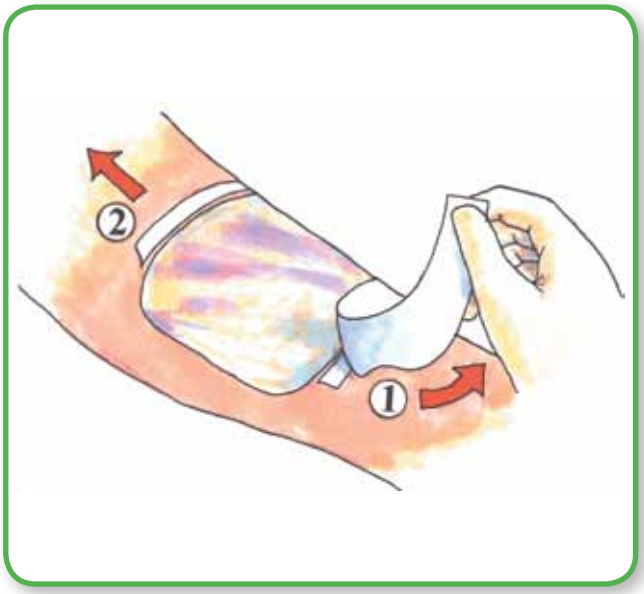
Mepore® Film



Только для повязки размером 10 x 25 см и 15 x 20 см: снимите по надрезам центральную часть бумажного покрытия.



Снимите защитную бумагу (с надписью "Mepore") для открытия клейкого слоя.



Наложите повязку и осторожно разгладьте ее по поверхности кожи. Снимите защитную бумажную рамку. Затем удалите два белых бумажных элемента с краев повязки. Не растягивайте повязку во время наложения.

Повязки Mepore® Film стерильно упакованы в индивидуальные пакеты

Арт. №	Размер, см	Кол-во/ в тов. кор.	Кол-во/ в трансп. кор.
270600	6 x 7	100	600
271500	10 x 12	70	210
272500	10 x 25	20	100
273000	15 x 20	10	50

ОБЛАСТИ ПРИМЕНЕНИЯ

Благодаря тому, что повязка Mepore® Film идеально повторяет контуры тела, она может применяться как фиксирующее средство или как вторичная повязка для закрытия первичных повязок – например, гидрогелей, альгинатных и губчатых повязок.

Mepore® Film подходит для широкого спектра чистых ран на стадии грануляции, таких, как:

- Поверхностные ожоги
- Участки вокруг внутривенных катетеров
- Рваные раны
- Места взятия кожных трансплантатов
- Поверхностные пролежни
- Закрытые хирургические раны
- Для предотвращения повреждения поверхностного слоя кожи

Дополнительная информация на сайте

www.molnlycke.com, www.molnlycke.ru

Mesoft®

НЕТКАНЫЕ САЛФЕТКИ И ТАМПОНЫ

Салфетки и тампоны Mesoft® являются экономичной альтернативой традиционной хлопковой марле.

Основные особенности Mesoft® – превосходная впитывающая способность, мягкость материала и незначительное количество остаточных волокон.

Салфетки и тампоны Mesoft® выпускаются разного размера, как стерильные, так и нестерильные.

ПРЕИМУЩЕСТВА MESOFT

- Эффективные абсорбирующие свойства. Mesoft® абсорбирует, по меньшей мере, на 50% больше жидкости или экссудата по сравнению с марлей.
- Мягкий материал Mesoft® не ранит кожу.
- Оставляет значительно меньше волокон по сравнению с традиционной марлей.
- Структура волокон позволяет эффективно очищать рану.
- Салфетки и тампоны Mesoft® сохраняют свою форму даже после намокания.
- Дизайн упаковки обеспечивает удобное использование.
- Высокие абсорбирующие свойства и конкурентоспособные цены делают Mesoft® экономичной альтернативой традиционной марле.

ОБЛАСТИ ПРИМЕНЕНИЯ

Салфетки и тампоны Mesoft® широко применяются при оказании медицинской помощи. Они могут использоваться для абсорбции, защиты, при дезинфекции и в качестве заполняющего материала, в качестве очищающего материала, для обработки ран или как повязки.

Mesoft®

4-слойные салфетки Mesoft®, стерильные 40 г.

Арт. №	Размер, см	Кол-во/ в конверте, шт	Кол-во/ в тов. кор., шт	Кол-во/ в трансп. кор., шт
156040	5 x 5	2	150	3000
156065	5 x 5	5	150	3000
156102	7.5 x 7.5	2	250	3000
156140	7.5 x 7.5	2	150	4200
156105	7.5 x 7.5	5	250	5500
156165	7.5 x 7.5	5	150	4200
156340	10 x 10	2	150	2400
156365	10 x 10	5	150	2400
156310	10 x 10	10	150	2250
156440	10 x 20	2	120	1200
156465	10 x 20	5	120	1200

Салфетки Mesoft®, нестерильные 40 г.

Арт. №	Размер, см	Кол-во/ в тов. кор., шт	Кол-во/ в трансп. кор., шт.
156000	5 x 5	300***	2400
156115	7.5 x 7.5	100**	2000
156100	7.5 x 7.5	300**	5100
156315	10 x 10	100*	5600
156300	10 x 10	200**	2800
156415	10 x 20	100*	3000
156400	10 x 20	200**	1400

* Бумажный пакет ** Картонная коробка

4-слойные салфетки Mesoft® с Y-образным разрезом, стерильные 40 г.

Арт. №	Размер, см	Кол-во/ в конверте, шт	Кол-во/ в тов. кор., шт	Кол-во/ в трансп. кор., шт
155030	10 x 10	1	130	1950

Салфетки Mesoft®, нестерильные 30 г.

Арт. №	Размер, см	Кол-во/ в тов. кор., шт	Кол-во/ в трансп. кор., шт.
157000	5 x 5	100	8000
156056	5 x 5	150*	3150
157100	7.5 x 7.5	100	6000
156156	7.5 x 7.5	150*	4200
157300	10 x 10	100	6000
156356	10 x 10	120*	2160
157400	10 x 20	100	3000

* Упаковка «Cleanbox» обеспечивает гигиеничное извлечение средств Mesoft.
Все остальные артикулы поставляются в бумажных пакетах.

Тампоны Mesoft®, стерильные 30 г.

Арт. №	Размер	Диаметр, мм	Кол-во/ в конверте, шт	Кол-во/ в тов. кор., шт	Кол-во/ в трансп. кор., шт
156760	Малые	28	5	100	2800
156860	Средние	39	5	100	1500
156960	Большие	45	5	70	1050
156961	Большие	45	10	120	1200

Тампоны Mesoft®, нестерильные 30 г.

Арт. №	Размер	Диаметр, мм	Кол-во/ в тов. кор., шт	Кол-во/ в трансп. кор., шт
156700	Малые	28	100	2200
156800	Средние	39	100	1300
156900	Большие	45	100	900

Дополнительная информация на сайте

www.molnlycke.com, www.molnlycke.ru

Mesorb®

АБСОРБИРУЮЩАЯ ПОВЯЗКА С НЕПРОНИЦАЕМЫМ ДЛЯ ЭКССУДАТА БАРЬЕРОМ

Мягкая высокоабсорбирующая повязка Mesorb® способна впитывать большие количества экссудата. Водонепроницаемый барьер защищает одежду и постельное белье от попадания экссудата.

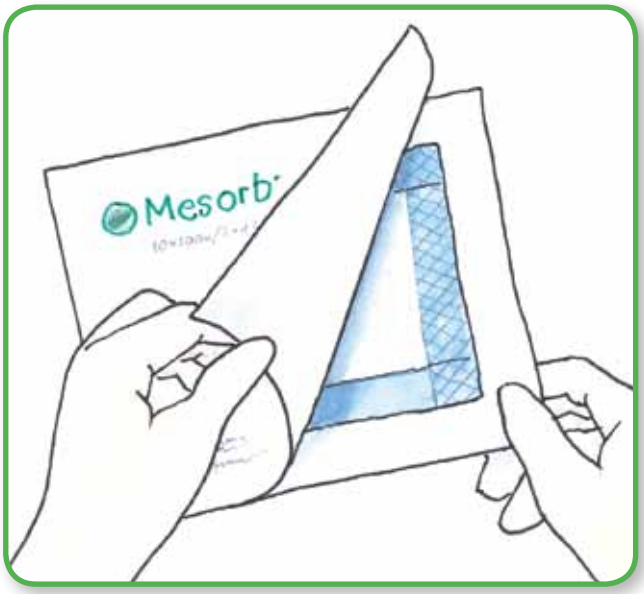
ПРЕИМУЩЕСТВА MESORB

- Высокоэффективное впитывание
- Хорошие защитные свойства
- Воздухопроницаемость
- Экономичность
- Уникальный, непроницаемый для экссудата барьер позволяет реже менять повязки и защищает одежду и постельное белье от загрязнения экссудатом

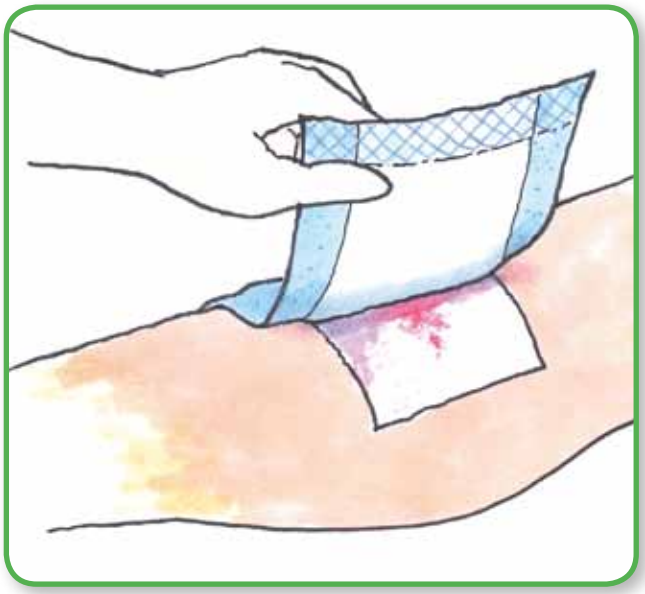
КАК ДЕЙСТВУЕТ MESORB

Благодаря наличию слоев с различными физическими свойствами обеспечивается отток и накопление экссудата в центральном высокоабсорбирующем слое повязки. Центральный слой обеспечивает одновременно защиту раны и отсутствие «парникового эффекта».
Водоотталкивающее покрытие на обратной стороне повязки предотвращает инфицирование раны и предохраняет одежду и постельное белье от загрязнения.
Покрытие по бокам повязки служит защитой от боковых протечек.

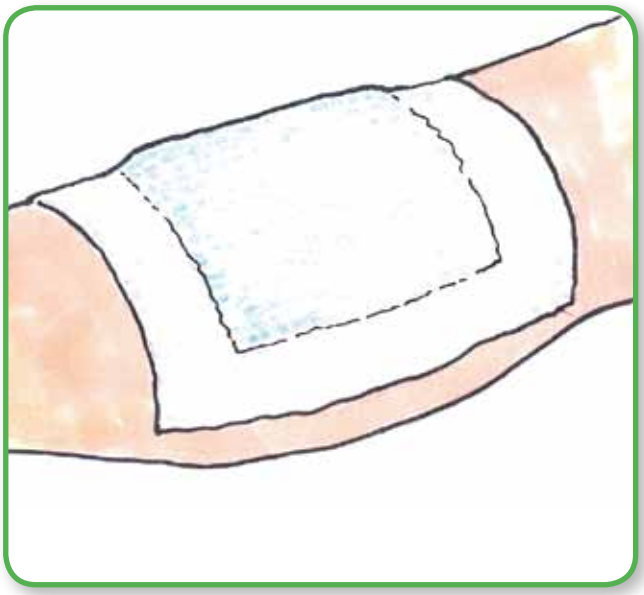
Mesorb®



Вскройте упаковку и достаньте повязку.



Наложите Mesorb на область раны или на выбранную первичную повязку с заступом на окружающую кожу не менее 1 см.



Зафиксируйте на месте подходящим фиксирующим средством (например, Mefix®, Mepore® Film, или Tubifast™)

Повязки Mesorb® стерильно упакованы в индивидуальные пакеты

Арт. №	Размер, см	Кол-во/ в тов. кор.	Кол-во/ в трансп. кор.
677001	10 x 13	50	400
677080	10 x 10	10	80
677201	13 x 15	50	300
677280	10 x 15	10	80
677401	10 x 23	50	300
677480	10 x 20	10	80
677601	15 x 23	50	300
677680	15 x 20	10	60
677701	23 x 25	30	120
677780	20 x 25	10	70
677801	23 x 30	30	120
677880	20 x 30	10	50

Дополнительная информация на сайте

www.molnlycke.com, www.molnlycke.ru

ОБЛАСТИ ПРИМЕНЕНИЯ

Mesorb® предназначен для применения на умеренно и сильно экссудирующих ранах и открытых дренажах – без необходимости накладывать дополнительные повязки между раной и Mesorb®.
Mesorb® может использоваться как первичная повязка (непосредственно на рану), или как вторичная повязка, в случаях, когда требуется эффективная абсорбция (например, в комплексе с Mepitel® или Mepilex® Transfer).

СРЕДСТВА КОНТРОЛЯ ЗА СЛЮНООТДЕЛЕНИЕМ

Стоматологические прокладки DryTips®, появившиеся на рынке почти 20 лет назад, в настоящее время являются уникальными и передовыми средствами контроля за слюноотделением. Большинство стоматологов и гигиенистов признают их одним из самых удачных продуктов на рынке. Прокладки DryTips® имеют несколько преимуществ по сравнению с обычными ватными тампонами, а именно, их отличают большая экономичность, а также и более высокий уровень комфорта для пациента.

DryTips® упакованы в нестерильные контейнеры

Арт. №	Размер	Кол-во/ в тов. кор.	Кол-во/ в трансп. кор.
161000	Малые	50	1300
161100	Большие	50	1300

ПРЕИМУЩЕСТВА DRYTIPS

- Отлично впитывают слюну и контролируют слюноотделение
- Пленка полностью покрывает область отверстий околоушных желез и слизистые оболочки щеки, защищая их от случайного травмирования инструментом
- Мягкие, надежные, не повышают чувствительность, не вызывают раздражений, приклеиваясь к области отверстий околоушных желез и слизистой оболочке щеки, легко удаляются
- Позволяют работать в более глубоких участках полости рта
- После применения не оставляют волокон в полости рта
- Эластичные, приспосабливаются к движениям щек

ОБЛАСТИ ПРИМЕНЕНИЯ

Прокладки DryTips® состоят из трех скрепленных вместе слоев, эффективно абсорбирующих слюну.

Предназначены для наложения на область отверстий околоушных желез и слизистые оболочки щек во время стоматологических процедур, при которых полость рта постоянно должна оставаться сухой.

ДЛЯ ЗАМЕТОК

Применение повязок с технологией Safetac®


Разрыв кожи


Сильно экссудирующая язва голени


Пролежень в области крестца


Рана на пальце


Пролежень в области крестца

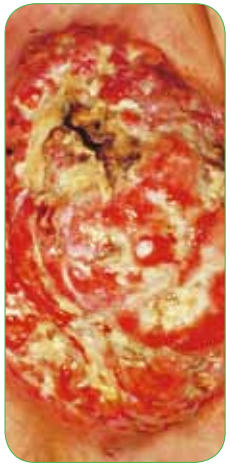

Язва голени


Диабетическая язва стопы


Пролежень


Язва голени


Фиксация сетчатых кожных трансплантатов


Гребовидные злокачественные новообразования


Пролежень в области крестца, день 0


Диабетическая язва стопы


Язва голени


Глубокие ожоги


Язва голени


Диабетическая язва стопы


Язва стопы

Частичный поверхностный ожог

Mepilex®, Mepilex® Heel

Самоклеящаяся губчатая повязка с покрытием Safetac®. Бережно фиксируется вокруг раны, эффективно абсорбирует экссудат, сводит к минимуму боль при снятии повязки. Мягкая и очень комфортная. Повязка может быть нарезана по нужному размеру. Идеальна для применения в местах, труднодоступных для наложения повязок. Mepilex® Heel – специальная форма повязки для пяточной области.

Степень абсорбции: 💧💧

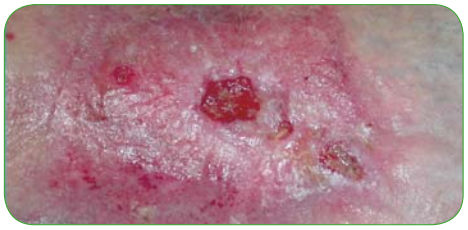
Пример применения

Лучевой ожог

Mepilex® Lite

Тонкая повязка из предложения Mepilex®. Mepilex® Lite обладает всеми преимуществами Mepilex®, но при этом тоньше. Может использоваться на местах, требующих применения тонкой и гибкой повязки.

Степень абсорбции: 💧



Язва стопы

Mepilex® Ag

Антибактериальная губчатая повязка с покрытием Safetac®. Содержит сульфат серебра, который создает эффективный бактериальный барьер и снижает активность широкого спектра патогенных микроорганизмов (бактерий и грибков), за счет чего также снижается запах из раны.

Степень абсорбции: 💧💧

Хирургический разрез

Mepilex® Border

Абсорбирующая повязка, водостойкая в условиях душа. Mepilex® Border имеет многослойную абсорбирующую губчатую прокладку и покрыта слоем Safetac®. Эффективно абсорбирует большое количество экссудата, бережно и надежно фиксируется на коже.

Степень абсорбции: 💧💧💧

Язва стопы

Mepilex® Border Lite

Mepilex® Border Lite обладает преимуществами Mepilex® Border, но при этом тоньше. Идеальна для широкого спектра ран, требующих особенно бережного ухода.

Степень абсорбции: 💧

Пролежень в области крестца, день 21

Mepilex® Border Sacrum

Повязка специальной формы для крестцовой области. Отлично сочетает в себе преимущества технологии Safetac® с эффективной абсорбирующей способностью. Остается на месте, дает высокий уровень комфорта, бережна к окружающей коже.

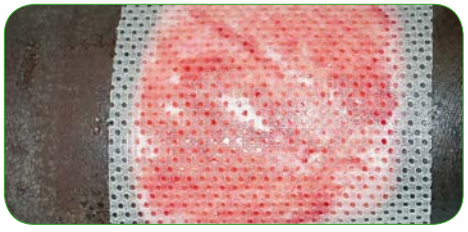
Степень абсорбции: 💧💧💧

Лучевой ожог

Mepilex® Transfer

Тонкая, высокоабсорбирующая губчатая повязка, обладающая всеми преимуществами технологии Safetac®. Mepilex® Transfer эффективно отводит экссудат вертикально вверх во вторичную повязку, снижая риск протекания или мацерации. Подходит для применения на местах, труднодоступных для наложения повязок.

Степень абсорбции: 💧💧💧



Mepitel на месте забора кожного трансплантата

Mepitel®

Контактная накладка на рану со слоем Safetac®. Mepitel® разработана для прямого контакта с раной. Может использоваться в комплексе со вторичной абсорбирующей повязкой. Сводит к минимуму травмирование раны, не прилипает к раневой поверхности.

Степень абсорбции: 💧 – 💧💧💧
(в зависимости от свойств вторичной повязки)

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MÖLNLYCKE HEALTH CARE

REPORT OF EXPERIENCES:

Atraumatic Dressings in Fragile Skin Conditions: Use of the Soft Silicone Dressing (Mepilex®) in Hereditary and Acquired Bullous Skin Diseases.

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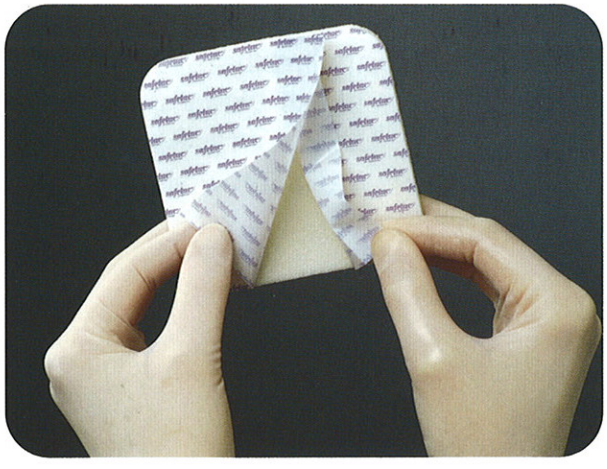


Soft silicone dressing

Here we present our experience with the absorbent soft silicone dressing (Mepilex) in wound management of patients with hereditary and acquired fragile skin conditions. Twenty-two patients seen as out- or inpatients were evaluated. Thirteen patients suffered from recurrent blistering caused by hereditary epidermolysis bullosa (EB), nine from acquired bullous diseases including bullous pemphigoids, pemphigus vulgaris, EB acquisita, subcorneal pustulosis, toxic contact dermatitis and blistering as a result of radiation therapy. The age of the patients spanned from 1 to 91 years.

Wound healing

To assess its capacity to influence wound healing and to protect lesional skin from further blistering Mepilex was applied to pressure areas like elbows, knees and feet and to other areas with chronic or acute wounds.

The patients/parents gave informed consent to apply Mepilex as a wound care product. Patients, parents of young children and nurses were instructed how to use the soft silicone dressing.
The wounds were cleaned with skin desinfectants e.g. 0,1% Lavasept (Polyhexanid) or Octenisept (Octinidinhydrochlorid 0,1% - Phenoxyethanol 2%) and Mepilex was directly applied onto the wounds. It was recommended to change dressings daily in order to check for blistering, signs of infection and to exclude adverse events. However, some patients left the dressing for up to five days.
In most cases Mepilex had to be fixated with conventional bandages. The size of the assessed lesions was measured before the first application of Mepilex. Secretion, epithelialization, inflammation were documented, viable and non viable tissue was estimated before the first application, at each clinical visit and at the end of the treatment. At each visit photos were taken.

Results

We observed good wound healing of acute and chronic wounds, with fast epithelialization in most cases. Mepilex showed good capacity to absorb wound secretion. The soft silicone adhesive layer did not tear the EB skin and only in one case of an acute eruptive pemphigus vulgaris did the Mepilex dressing remove the epidermis when it was changed. No allergic reactions were observed.

After complete reepithelialization Mepilex can protect pressure points like knees, elbows, shoulders from mechanically induced painful lesions, especially in children with EB. However new blisters can occur under the dressing and these needs to be treated. Most patients with hereditary EB continuously develop blisters. Eleven out of 13 EB patients added Mepilex to their standard wound dressing products. Especially EB patients with restricted ability to change dressings by themselves used Mepilex as an "easy to handle" product which could be changed without assistance.

However, patients need to be instructed that careful inspection of the wound to exclude e.g. wound infection is as important as sterile drainage of blisters that occur under the Mepilex dressing. As with every other dressing, unfrequent dressing changes can result in adverse events.

Positive remarks

- Good wound healing and epithelialization
- Excellent protection and padding
- Good absorption
- Atraumatic to wound bed
- No or little pain during dressing changes
- No allergic reactions
- Easy to handle
- Independent wound care
- Removal of crusts when combined e.g. with creams or gels

Problematic aspects

- Softening of wound edges
- Initial spreading of wound borders
- Can be too adhesive in acute eruptive phase of pemphigus
- "Easy to handle" might lead to unreflected long term application
- Ulceration, superinfection and hypergranulation under unreflected long term application
- In incontinent patients the dressing might absorb urine

Frequent EB patients´ comments

- Good healing
- Good protection
- Good absorption
- Easy to handle

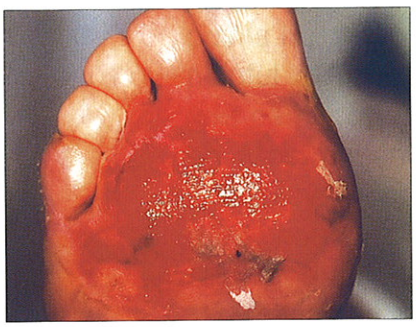
Conclusion

The application of soft silicone dressings like Mepilex in acute and chronic wounds in fragile skin conditions shows good wound healing, epithelialization, protection and it can be used as an "easy to handle" dressing. Strong secretion from wounds in bullous diseases can result in initial softening at the wound edges under Mepilex before reepithelialization starts. Since Mepilex is much easier to handle than many other wound dressings some patiets tended to unreflected long term use which can cause adverse effects. Dressing changes every 4th or 5th day can result in exulceration and widening of wounds. Therefore especially when wounds are infected, daily dressing changes and careful cleaning before application are required.

In acute phases of superficial blistering or in newborns with extremely fragile skin the adhesive effect might be too strong and the product should be handled with care.

Figure legends

Patient 1:
An acute erosion after mechanically induced blistering under the right foot of a patient with EB acquisita (A) showed complete epithelialization within 4 weeks (B). To protect from shearing forces Mepilex was used as a "dressing shoe" after the initial lesion healed (C). Mepilex was fixed with a cohesive conforming bandage.



Patient 1A

Patient 1B

Patient 1C

Patient 2:
Blistering of the lower arm in bullous pemphigoid (A). Good wound healing and epithelialization under Mepilex. However, new blisters occurred under the dressing in the early phase of the therapy, but blister roofs were not removed by the dressing change (B). Wound secretion was absorbed by Mepilex (C).

Patient 2A

Patient 2B

Patient 2C

Patient 3:
Chronic wounds at the shoulders of a teenager with EB showed good wound healing under Mepilex. It was protective and easy to handle (A). Circular incision of the Mepilex dressing allowed adaption to this region (B). However, careful wound cleaning and dressing changes every day in infected superficial wounds are important in order to avoid adverse events.

Patient 3A

Patient 3B

Patient 4:
Bullosis diabeticorum and consecutive diabetic ulcer (A). Good absorption, wound healing and reduction of shearing forces at a pressure point of the lateral left foot (B).

Patient 4A

Patient 4B

ORPHANET JOURNAL OF RARE DISEASES

REVIEW Open Access

Multicentre consensus recommendations for skin care in inherited epidermolysis bullosa

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Abstract

Background: Inherited epidermolysis bullosa (EB) comprises a highly heterogeneous group of rare diseases characterized by fragility and blistering of skin and mucous membranes. Clinical features combined with immunofluorescence antigen mapping and/or electron microscopy examination of a skin biopsy allow to define the EB type and subtype. Molecular diagnosis is nowadays feasible in all EB subtypes and required for prenatal diagnosis. The extent of skin and mucosal lesions varies greatly depending on EB subtype and patient age. In the more severe EB subtypes lifelong generalized blistering, chronic ulcerations and scarring sequelae lead to multiorgan involvement, major morbidity and life-threatening complications. In the absence of a cure, patient management remains based on preventive measures, together with symptomatic treatment of cutaneous and extracutaneous manifestations and complications. The rarity and complexity of EB challenge its appropriate care. Thus, the aim of the present study has been to generate multicentre, multidisciplinary recommendations on global skin care addressed to physicians, nurses and other health professionals dealing with EB, both in centres of expertise and primary care setting.

Methods: Almost no controlled trials for EB treatment have been performed to date. For this reason, recommendations were prepared by a multidisciplinary team of experts from different European EB centres based on available literature and expert opinion. They have been subsequently revised by a panel of external experts, using an online-modified Delphi method to generate consensus.

Results: Recommendations are reported according to the age of the patients. The major topics treated comprise the multidisciplinary approach to EB patients, global skin care including wound care, management of itching and pain, and early diagnosis of squamous cell carcinoma. Aspects of therapeutic patient education, care of disease burden and continuity of care are also developed.

Conclusion: The recommendations are expected to be useful for daily global care of EB patients, in particular in the community setting. An optimal management of patients is also a prerequisite to allow them to benefit from the specific molecular and cell-based treatments currently under development.

Keywords: Inherited epidermolysis bullosa, Multidisciplinary management recommendations, Skin care, Wound care, Itch, Pain, Therapeutic education, Disease burden, Quality of life, Continuity of care

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Background

Inherited epidermolysis bullosa (EB) refers to a clinically and genetically heterogeneous group of rare disorders characterized by fragility of the skin and mucous membranes. Based on the site of blister formation, four major types of EB are currently distinguished: EB simplex (EBS), junctional EB (JEB), dystrophic EB (DEB), and Kindler syndrome (KS); each one is then subdivided into several subtypes based on the mode of transmission and a combination of phenotypic, immunofluorescence, ultrastructural and molecular findings [1]. Once the cleavage level and protein expression pattern has been determined, molecular testing is the most accurate diagnostic procedure for EB subtype definition. Furthermore, it is required for DNA-based prenatal diagnosis. The extent and severity of skin and mucous membrane lesions and multiorgan involvement vary markedly in the different EB types and subtypes and in relation to age [1-5]. In several EB subtypes, the cutaneous and extracutaneous manifestations and complications lead to a significant morbidity and even to premature death. The rarity of EB and the phenotypic variability challenge the appropriate care of these patients.

Despite the preclinical development of different molecular and cell-based treatment strategies, no cure is still available for EB [6]. In the absence of a specific therapy, patient management is currently centered on preventive and skin care measures, and early recognition and symptomatic treatment of complications. As almost no controlled trials for EB treatment have been performed to date [7], measures for EB management mainly rely on the experience of physicians, nurses and other involved healthcare professionals. The development of consensus recommendations based on literature data and shared expertise among experts from different countries represents an important step towards improved standard of care and quality of life for affected patients and their caregivers. Consensus recommendations based on best evidence available have been recently generated by an international panel of EB experts [8]. They comprise 17 items centered on wound care and related general health and patient issues. In addition, comprehensive best practice guidelines addressing all aspects of oral health care in EB have been published [9]. Finally, guidelines for wound and skin care in the major EB types have been generated by clinical experts and made available on the Debra International website [10]. These documents provide an invaluable support for the treatment of specific and major manifestations of EB disease. However, they do not address several equally important disease-related aspects such as the multidisciplinary management organization, therapeutic patient education, care of disease burden and continuity of care. We have therefore developed a list of consensus recommendations on current best practices for global skin care in EB. They are conceived to provide a practical support for day-to-day management of patients both in a hospital setting and in community care. Our aim has been to consider all aspects of patient life affected by the skin disease and also the family burden. The recommendations are addressed to all healthcare professionals dealing with EB both in centres of expertise and in community care: physicians (dermatologists, neonatologists, pediatricians, internists, pain relief doctors, anesthetists, surgeons, general practitioners), nurses, dieticians, psychologists, physical and occupational therapists, and social workers. They are expected to be useful also for patients and their caregivers.

Methods

A multidisciplinary group of experts in EB diagnosis and care from different European countries (France, Italy and Portugal) met in Paris in October 2011 at the occasion of the closing meeting of the EU-supported project "Together Against Genodermatoses". It was decided to generate a list of consensus recommendations on current best practices for global skin care in patients affected with all types of EB. A list of topics was identified and subgroups of experts revised the pertinent literature (English, French and Italian) since January 2000. Older articles deemed relevant by the experts were also considered. Literature search included all published recommendations and guidelines on EB care. A provisional list of recommendations for each topic was then prepared. The resulting global document was revised by additional experts from Spain and Slovenia and then circulated among a second group of experts using an online-modified Delphi method to generate consensus. The final document is reported below.

Multidisciplinary management of EB patients

The fragility of the skin and mucous membranes in EB patients results in the involvement of many organs and systems [1-5,11-18] (Tables 1 and 2). In addition, disease manifestations vary upon the age of the patients and the EB type and subtype.

General principles

- Treatment of EB patients should be performed in centres of expertise adhering to the recommendations for quality criteria issued by the European Union Committee of Experts on Rare Diseases (EUCERD) [19].
- Centres of expertise should also guarantee the continuity of care between pediatric age and adulthood [20].
- A coordinated multidisciplinary approach must be adopted (Table 3).
- The coordinator of the team should be a dermatologist in order to ensure both an integrated

Table 1 Major epidermolysis bullosa complications affecting the skin, eye and ENT area

Tissue/organ/system	Major complications	EB type/subtype*
Skin	Fluid loss	Lethal acantholytic EB, JEB-H, EBS-PA, JEB-PA
	Chronic/infected wounds	RDEB-SG, RDEB-I, RDEB-O, JEB-H, JEB-nH, EBS-AR, DEB-Pr, DDEB-G, EBS-DM
	Exuberant granulation tissue	LOC, JEB-H, JEB-nH
	Atrophic scars, post-inflammatory pigmentary changes	DEB, JEB, EBS
	Poikiloderma/diffuse skin atrophy	KS
	Excessive/hypertrophic scarring	RDEB-SG, RDEB-I, DEB-Pt, DEB-Pr, RDEB-O
	Albopapuloid lesions	DEB
	Milia	DEB, JEB, EBS, KS
	Palmoplantar keratoderma	EBS, JEB-nH, KS
	Aplasia cutis congenita	EBS-PA, JEB-PA, DEB, other JEB and EBS subtypes
	EB nevi	JEB, DEB, EBS
	Basal cell carcinomas	EBS-DM
	Squamous cell carcinomas	RDEB-SG, RDEB-O, KS, JEB-nH, RDEB-I
Skin adnexa	Onychodystrophy, nail shedding or loss	DEB, JEB, EBS-MD, EBS-DM, EBS-PD, EBS-AR, EBS-O, KS
	Scarring alopecia	JEB-nH, RDEB-SG, JEB-H, JEB-PA, RDEB-O
	Alopecia universalis	Lethal acantholytic EB
	Hypotrichosis	EBS-PD
Oral cavity	Microstomia, ankyloglossia, obliteration of the oral vestibules	RDEB-SG, RDEB-I, RDEB-O
	Enamel hypoplasia	JEB, EBS-MD
	Multiple caries and tooth decay	DEB, JEB
	Periodontitis	KS
External eye	Corneal erosions	RDEB-SG, JEB-H, RDEB-O, RDEB-I, JEB-nH, EBS-DM, KS
	Blepharitis, corneal scarring and/or pannus formation	RDEB-SG, RDEB-I, JEB-H, RDEB-O, JEB-nH
	Symblepharon	LOC, RDEB-SG, RDEB-I, JEB-H, JEB-nH
	Ectropion/exposure keratitis	JEB-H, RDEB-SG, KS
	Diminished vision/blindness	RDEB-SG
	Conjunctival granulation tissue	LOC
External ear	External auditory canal narrowing/conductive hearing loss	RDEB-I
Nose	Nare narrowing (granulation tissue)	JEB-H, JEB-nH, LOC

*The epidermolysis bullosa (EB) types and subtypes which present a higher frequency of a given complication are listed first.
EBS, epidermolysis bullosa simplex; EBS-PA, EBS with pyloric atresia; EBS-DM, EBS, Dowling-Meara; EBS-MD, EBS with muscular dystrophy; EBS-AR, EBS, autosomal recessive; EBS-PD, plakophilin deficiency; EBS-O, EBS, generalized other; JEB, junctional epidermolysis bullosa; JEB-H, JEB, Herlitz; JEB-nH, JEB, non-Herlitz; JEB-PA, JEB with pyloric atresia; LOC, laryngo-onycho-cutaneous syndrome; DEB, dystrophic epidermolysis bullosa; DDEB, dominant DEB; DDEB-G, DDEB, generalized; RDEB-SG, recessive DEB, severe generalized; RDEB-O, recessive DEB, generalized other; RDEB-I, recessive DEB, inversa; DEB-Pr, DEB, pruriginosa; DEB-Pt, pretibial DEB; KS, Kindler syndrome.

management and continuity of care with the community healthcare system [21-30].

- The multidisciplinary management is centered on the patient; therefore, it is a tailored treatment for each patient.
- The multidisciplinary team should be specifically trained and regularly updated [19].

Care of the EB newborn and infant

Several procedures performed in newborns and infants can severely injury the EB fragile skin and require specific and adapted care measures [10,31,32]. In addition, the skin immaturity in pre-term newborns affected with EB and the ongoing functional skin adaptation to the extra-uterine environment in term babies demand particular caution in skin handling and care. Skin and mucosal lesions predispose to recurrent and potentially life-threatening infections and cause loss of fluids and electrolytes which can lead to dehydration and electrolyte imbalance. Although the extent and severity of skin and mucous membrane involvement is extremely variable, general and specific measures for skin care of the newborn and infant affected with EB can be recommended.

Table 2 Other major extracutaneous complications of epidermolysis bullosa

Tissue/organ/system	Major complications	EB type/subtype*
Gastrointestinal tract	Pyloric atresia	JEB-PA, EBS-PA
	Esophageal stenosis/strictures/web formation	RDEB-SG, RDEB-I, KS, RDEB-O
	Chronic constipation/fecal impaction	RDEB-SG, RDEB-I, RDEB-O, DDEB, JEB-H, JEB-nH, EBS-DM, EBS-MD
	Gastroesophageal reflux disease	RDEB, JEB-nH, EBS-DM, EBS-MD, JEB-PA, JEB-H, DDEB
	Anal fissures/stenosis	RDEB-SG, RDEB-I, RBED-O, KS
	Protein-loosing enteropathy	JEB-PA, EBS-PA, JEB-H, JEB-nH
	Colitis/diarrhea	KS, RDEB, JEB-PA
Genitourinary tract	Urethral strictures, meatal stenosis	JEB-H, RDEB-SG, JEB-PA, JEB-nH, LOC, KS
	Genitourinary malformations, ureteral/ureterovesical junction obstruction/stenosis, recurrent cystitis	JEB-PA, EBS-PA
	Vulvar/vaginal scarring/strictures	RDEB-I, KS
	Renal failure	RDEB-SG, JEB-PA, JEB-nH
Upper respiratory tract	Tracheolaryngeal stenosis/acute respiratory failure	JEB-H, LOC, EBS-MD, lethal acantholytic EB, EBS-DM
Musculoskeletal system	Osteopenia and osteoporosis	RDEB-SG, RDEB-O, JEB-nH
	Limb flexion contractures	RDEB-SG
	Digit contractures/pseudosyndactyly	RDEB-SG, RDEB-O, RDEB-I, KS
	Mitten deformities	RDEB-SG
	Muscular dystrophy	EBS-MD, EBS-PA
Hematopoietic system	Multifactorial anemia	RDEB-SG, JEB-H, JEB-PA, EBS-PA, JEB-nH, EBS-AR, EBS-DM, RDEB-O
Heart	Dilated cardiomyopathy	RDEB-SG, JEB-nH, EBS-MD
Endocrine	Delayed puberty, amenorrhea	RDEB-SG, RDEB-O
Systemic complications	Sepsis	JEB-H, JEB-nH, RDEB-SG, EBS-DM
	Failure to thrive, growth retardation	JEB-H, JEB-PA, EBS-PA, RDEB-SG, JEB-nH, RDEB-O, EBS-AR, EBS-DM, RDEB-I

*The EB types and subtypes which present a higher frequency of a given complication are listed first.
EBS, epidermolysis bullosa simplex; EBS-PA, EBS with pyloric atresia; EBS-DM, EBS, Dowling-Meara; EBS-MD, EBS with muscular dystrophy; EBS-AR, EBS, autosomal recessive; EBS-PD, plakophilin deficiency; EBS-O, EBS, generalized other; JEB, junctional epidermolysis bullosa; JEB-H, JEB, Herlitz; JEB-nH, JEB, non-Herlitz; JEB-PA, JEB with pyloric atresia; LOC, laryngo-onycho-cutaneous syndrome; DEB, dystrophic epidermolysis bullosa; DDEB, dominant DEB; DDEB-G, DDEB, generalized; RDEB,recessive DEB; RDEB-SG, recessive DEB, severe generalized; RDEB-O, recessive DEB, generalized other; RDEB-I, recessive DEB, inversa; DEB-Pr, DEB, pruriginosa; DEB-Pt, pretibial DEB; KS, Kindler syndrome.

General principles

- The first multidisciplinary care should be provided independently from the diagnostic definition of the EB type and subtype.
- Diagnosis should be performed as soon as possible in order to implement the most appropriate treatment, communicate the diagnosis and specific information to the parents. Methods and criteria for diagnosis have been regularly updated by an International Consensus Conference [1].
- The communication of the diagnosis should involve the dermatologist and the neonatologist and should be addressed to both parents. The information should be delivered gradually and adapted to the family socio-cultural level.
- A psychologist should support the family (see paragraph "Care of disease burden").
- Caregiver education should start promptly (see paragraph "Therapeutic patient education").
- Members of the multidisciplinary team usually involved in EB care in infancy are neonatologist/pediatrician, dermatologist, anesthetist, pathologist, medical geneticist, psychologist and specialized nurses.

General measures

- Blood sampling for complete blood count, electrolytes, C-reactive protein, urea, creatinine, total serum protein and albumin, iron, zinc, and, whenever required, blood cultures. Swabs for culture should be taken from infected wounds.
- In severely affected newborns, a venous access should be guaranteed through placement of an umbilical venous catheter. Whenever required, this will be followed by elective insertion of an indwelling central venous catheter (tunnelled external design such as Broviac catheters).

Table 3 Specialists involved in multidisciplinary epidermolysis bullosa care

Physicians	Other professionals
Dermatologist	Specialist nurse
Neonatologist/pediatrician/internist	Dietitian
Pathologist	Psychologist
Medical geneticist	Dental hygienist
Otolaryngologist	Physical therapist
Ophthalmologist	Occupational therapist
(Pediatric) surgeon	Speech therapist
Orthopedic surgeon	Social worker
Plastic surgeon	
(Pediatric) gastroenterologist	
Dentist	
(Pediatric) anesthetist	
Endocrinologist	
Neurologist	
Radiologist	
Pain relief doctor	
Cardiologist	
Nephrologist	
Oncologist	

- The following measures should be adopted to prevent blistering:
  - ✓ the baby should not be placed systematically in an incubator unless needed for reasons such as prematurity [10]: heat and humidity can lower the threshold for blistering. An overhead heater can be used, cautiously regulated.
  - ✓ Naso- and oro-pharyngeal suction should be avoided. If required, a soft catheter is chosen, and minimal suction pressure exerted [31].
  - ✓ The umbilical cord should be secured with a ligature, avoiding the use of plastic clamps which rub the skin [10,31].
  - ✓ The use of clips should be avoided, and name band put on clothing instead of wrist.
  - ✓ Electrodes should be of small size; the adhesive rim should be removed allowing only the lubricated central portion to be in contact with the skin and the electrode should then be secured with a non-adhesive dressing (e.g. Mepilex®, Mölnlycke) [33].
  - ✓ Clip sensors should be used for pulse oximetry.
  - ✓ For blood pressure monitoring, thick padding is recommended before applying the blood pressure cuff.
  - ✓ When possible, skin-to-skin contact (kangaroo care) with parents should be encouraged.
  - ✓ There is no contraindication to immunization for infectious diseases.

Skin care

- For clothing, a front-fastening babygro is easier to put on and remove. It should be turned inside out to prevent the seams from rubbing skin [31]. If available, DermaSilk® (Alpretec) underclothes and gloves can be used as they combine silk properties with the protective activity of an antimicrobial agent, in addition to being seam-free. Alternatively, Tubifast (Mölnlycke) garments and gloves can be used [10].
- Disposable nappies can be used, they should first be lined with a soft material (e.g. soft silicone contact layer or foam such as Mepitac®, Mölnlycke) in order to reduce skin rubbing from the elastic edges. Nappies with Velcro fasteners prove safer as it is less likely for the securing tapes to adhere to the skin [10,31].
- Particular attention should be paid to avoid friction when handling the baby: he/she should be nursed on neonatal incubator mattress, and lifted by sliding hands below the mattress or using the sheet [10]. To handle the naked infant, the nurse/caregiver should roll the baby away, place one hand behind his/her neck and head and the other one behind his/her buttocks, let the baby roll back and then lift him/her [31,32] (Figure 1).
- Adhesive tapes must be avoided. Soft silicone fixation tapes providing atraumatic removal (e.g. Mepitac®) are recommended to secure devices such as electrodes, catheters, tubes, and probes. For removal they should be rolled out gently rather than lifted.
- Silicone Medical Adhesive Removers (SMARs), such as Appeel® (CliniMed) or Niltac®, should be used to remove electrodes or accidentally applied tapes or dressing/clothing adhered to wounds. If SMARs are not available, liquid and white soft paraffin in equal parts facilitate atraumatic removal [10,34,35].
- Regular bathing in tepid to slightly warm water is recommended (Figure 1), the frequency will be adapted to each case. If the infant presents crusted lesions, an emollient/oil-based cleanser should be used, while infected wounds should be treated with an antiseptic (e.g. containing 0.1% chlorhexidine). After bathing, the skin should be dried by gentle padding with a towel.
- Diaper area cleansing should be performed with liquid and white soft paraffin in equal parts or with an emollient/oil-based cleanser [10,31].
- Principles for blister, aplasia cutis congenita and wound treatment are similar to those applying to children and adults (see paragraph "Wound care").

Figure 1 Inherited epidermolysis bullosa: wound care. (a, b) Dressing cart prepared in advance for patient dressing: soft silicone foams (*), petroleum jelly (<), emollient cream (>), antimicrobial cream (◊), gauzes, tubular bandages, needles and swabs for culture (∇). **(c)** How to hold the baby: one hand behind the head and the other one behind the buttocks. **(d)** Bathing the baby also facilitates atraumatic removal of dressings which float into the water. **(e-h)** Wound care with non-adherent soft silicone dressings and thin polyurethane-soft silicone foams. **(i)** Lancing and draining of a haemorrhagic blister. **(j-k)** Soft silicone foams specifically modelled for hand dressing **(j)**, and hand dressing to separate fingers and prevent early digit fusion **(k)**.

- Aplasia cutis congenita and blistering involving hands or feet or digit degloving following delivery require specific dressing in order to prevent early digit fusion [10]. The separation should be performed by using easily modelled dressings, such as soft silicone foams (e.g. Mepilex® or Mepilex Lite®), which are cut into strips (Figure 1). If advanced dressings are not available, paraffin-impregnated gauzes can be used, and should also be cut into thin strips. Attention should be paid to keep the first finger extended and separated from the rest of the hand.
- The diaper area is constantly subject to handling, exposed to urine, feces and to the diaper occlusion effect. We prefer to treat the less exuding erosions with paraffin-impregnated gauzes, replaced at each nappy change. Alternatively, a soft silicone primary wound dressing (e.g. Mepitel®) or hydrogel-impregnated gauzes (e.g. Intrasite® Conformable, Smith & Nephew) can be used. In more exuding lesions, an antiseptic and silicone foams (e.g. Mepilex® or Mepilex®Transfer) are indicated.

Feeding modalities

- In less severely affected newborns breast-feeding is possible: soft paraffin can be applied on the nipple and breast as well as on the infant face and lips to reduce friction from rooting reflex [31]. The mother should be trained to handle the baby and breast feed him. When breast-feeding proves traumatic, oral feeding remains the best option, also allowing to add supplements in malnourished infants.
- Commercially available teats should be softened with warm boiled water. The teat hole can be enlarged or

extra holes may be created to facilitate sucking. Lips can be protected with petroleum jelly to avoid the skin sticking to the teat [31].
- A Haberman feeder reduces the sucking effort and its long teat avoids nose trauma from the bottle collar [10,31].
- A few infants may require naso-gastric feeding. A small soft polyurethane tube fixed for few weeks will minimize internal damage and reduce the trauma [31].
- For nutritional principles see paragraph "Nutritional aspects".

Follow-up

- The infant should be discharged home when the general health condition is stable and the parents are adequately educated and confident to care for their baby. This decision is taken jointly by the dermatologist and neonatologist/pediatrician. The involvement of social workers and psychologists in the organization of the discharge is helpful.
- A first follow-up visit with a specialized team (usually: dermatologist, pediatrician, EB nurse, psychologist) will be organized in one or two weeks for severe EB subtypes (e.g. Dowling-Meara EBS, JEB and recessive DEB). It should comprise a complete clinical examination (skin/mucosae, nutrition, pain, etc.), dressing, and evaluate and pursue the therapeutic education of the parents. If the infant care is correctly performed the next appointment should be in one month, then every three months during infancy. In mild EB subtypes the follow-up visits will be every 3–6 months.

EB care from childhood to adult

Additional problems in skin and wound management during childhood to adulthood include, in particular in Dowling-Meara EBS, generalized forms of JEB and recessive DEB (RDEB) [4,5,12,13,17,36-38]:

- reduced patient compliance to care and claim for self-care;
- chronic pain;
- presence of chronic wounds and their susceptibility to infection;
- risk of cancer development;
- chronic itching;
- anemia and malnutrition secondary to oral and gastrointestinal involvement and chronic wounds, in turn negatively interfering with wound healing;
- psychological problems related to both disease acceptance and social relationship (school, hobbies, job, etc.).

General principles

- The members of multidisciplinary team vary upon the EB type and patient and family needs. In mild EBS subtypes (e.g. localized and generalized non-Dowling-Meara EBS), the dermatologist ensures the follow-up with the help of a specialized nurse. In severe EBS forms (such as Dowling-Meara EBS or EBS with muscular dystrophy), JEB and generalized DEB subtypes the core members are the dermatologist and the pediatrician supported by the EB nurse and dietician. Other specialists (ophthalmologist, dentist, digestive surgeon, psychologist, physiotherapists, etc.) are involved depending on disease complications.
- A regular follow-up is required to evaluate skin and mucosal conditions, general health status, and specific problems encountered by the patient and his/her caregivers. Follow-up planning should be performed taking into account the EB type, disease complications, family and patient compliance and specific complains. After childhood, EBS and mild DEB patients are generally seen by an EB specialist once a year; JEB and generalized RDEB should be seen at least twice a year. More frequent follow-up visits (e.g. every month) are required for the most severe patients in order to fasten wound healing and to early diagnose and treat squamous cell carcinoma.

General measures

- Monitoring of severe EBS variants (e.g. Dowling-Meara EBS or EBS with muscular dystrophy), JEB, and generalized RDEB subtypes comprises at follow-up visits: a complete blood count, electrolytes, total serum protein and albumin, iron, iron-binding capacity, ferritin, erythrocyte sedimentation rate, C-reactive protein, liver function tests, urea, creatinine and, if required, zinc, selenium, folate and vitamins (A, B_6, C, D and E) [22,39]. Swabs for culture should be taken from infected and critically colonized wounds, as blood cultures in case of sepsis suspicion.
- Patient adherence to therapy should be regularly checked. Caregiver and patient compliance and experience should be always taken into account in designing the care plan.
- Immunization schedule for infectious diseases should be regularly continued. Chicken pox vaccination is recommended.
- Preventive measures to reduce the onset of new lesions are summarized in Table 4 [10,31,32,40].

Table 4 Preventive measures to reduce the onset of new lesions during daily life

Direct skin protection	• Protect vulnerable skin sites, (e.g. knees and elbows) with soft silicon contact layers, silicon sheets or strips (e.g. KerraPro®) or thick padding
	• Use gloves when the child begins to crawl/walk and lifelong during sports or hobbies (e.g. DermaSilk® or Tubifast®)
	• Avoid hard shoes with internal seams, tight clothes and clothes with raised seams, tags in contact with the skin
	• Use protective padding for shoes, such as a poron insole or orthotic device
	• Pad the frame at the nose bridge and over the ears of eye glasses
Other measures	• Ensure that toys are frequently cleaned and in soft material without traumatic angles
	• Prefer hobbies and sports at low risk of skin trauma (e.g. adapted gym, swimming, ping-pong, reading, singing, playing music, electronic toys and informatics)
	• House air conditioning and other cooling measures in hot climates

Skin care

- Regular patient follow-up by the dermatologist comprises the assessment of the entire body including the scalp, external ear, genital/anal area, oral cavity and nostrils.
- A dermatological management is necessary in all types of EB and skin lesions.
- An appropriate analgesia should be performed before any procedure, such as bathing or dressing (see paragraph "Pain management").
- For the hygiene, a mild antiseptic cleanser (e.g. chlorhexidine 0.1% or polyhexanide, sodium hypochlorite 5–10 ml in 5 L of water, acetic acid ≤0.25%) should be used for extended and/or critically colonized/infected lesions [39,41]. An emollient/oil-based cleanser should be chosen for xerotic skin and hyperkeratotic or crusted lesions.
- Bathing frequency depends on the type of dressing and lesion characteristics: in case of infected wounds or dressings which stick to the lesions (e.g. paraffin-impregnated gauzes) bathing should be performed every other day; when advanced dressings are employed bathing can be delayed until once a week.
- New blisters should be lanced (finger prick lancet, sterile large-bore needle or scalpel blade) (Figure 1) and drained. The blister roof should be left in place to facilitate re-epithelialization, to reduce infection risk and pain [10,31,32,42].
- Daily use of emollients and moisturizing products is strongly recommended for xerotic skin in order to reduce blistering, pain and itching [31].
- Regular photoprotection is mandatory in patients affected by KS who present photosensitivity.
- Courses of topical keratolytic agents (e.g. urea, salicylic acid, ammonium lactate) are helpful to treat palmoplantar hyperkeratosis and/or keratoderma [40]. Their concentration depends on the patient age, rhythm of application, treatment duration and local tolerance. Particular caution is required for young children.
- Hyperhidrosis, frequent in EBS patients, should be treated in order to reduce/prevent blistering and itching. Corn flour is an inexpensive and easily available remedy [10,40], other absorbent powders (e.g. Zeasorb®, Stiefel Laboratories) may also be useful. An additional option is iontophoresis [43]. Furthermore, the use of botulinum toxin may be considered for severe plantar hyperhidrosis [43,44]. Silver-lined or Dermasilk socks keep feet dry and comfy, provide anti-friction action and reduce the risk of bacterial overgrowth [10,40].
- EB nevi should undergo a regular clinical and dermoscopic follow-up [11]. Although a slightly increased risk of melanoma has been reported only for RDEB, atypical pigmented lesions undergoing significant morphological changes should be biopsied [45 and references herein].
- No specific treatment is required for milia.
- Mucosal care:
  - Oral management should adhere to the recently published best practice guidelines for oral health care in EB [9].
  - Conjunctiva should be regularly lubricated, in particular in JEB or RDEB patients, with lanolin and preservative-free eye drops or gels, e.g. containing hyaluronic acid, polyethylene/propylene glycol or carbomer [45].
  - Nasal lubricants are more frequently indicated for JEB or RDEB patients; regular ointment containing vitamin E or simply petroleum jelly can be helpful.

Wound care

The choice of dressings varies upon the type and site of the lesions, but also product availability [8,10,42,46,47]. Advanced dressings delay the frequency of dressing change, thus reducing pain and manipulation-related risk of blistering and infections. In addition, non-

adherent dressings proved superior in reducing pain at dressing removal. However, systematic literature reviews showed only a modest advantage for advanced dressings (e.g. hydrogels, hydrofibers and foams) compared to paraffin-impregnated gauzes in accelerating healing of non-EB chronic wounds (venous leg ulcers, pressure sores, etc.) [48]. As to topical antibiotics and antiseptics, their role in healing of leg ulcers remains to be proved [49]; there is a good evidence of their usefulness for the treatment of superficial skin infections [50]. The debridement of the wounds is important to accelerate the healing process and to prevent infection: some dressings such as hydrogels, polymeric membranes and hydrofibers are helpful [8,10,46,47]. In case of multiple and deep necrotic lesions, mechanical debridement should be performed gently in the theatre with analgesia.

Dry to lightly exuding wounds

- Non adhesive soft silicone or lipido-colloid contact layers [e.g. Mepitel®, Adaptic® touch (Systagenix), Urgotul® (Urgo Medical), Silflex® (Advancis Medical)], thin polyurethane-soft silicone foams (e.g. Mepilex® Lite), and hydrogels (e.g. Intrasite® Conformable) appear to be the most suitable in these lesions [8,10,46,51]. Hydrogel dressings should be changed daily or as soon as they become dry. The other types could be changed every 3–4 days.
- The dressing choice depends on the affected site: e.g. flexible dressings should be used mainly for the folds. Soft bordered materials [e.g. Mepilex® Border, Alleyvn® Gentle Border (Smith & Nephew)] easily adapt to the different skin sites but they may be too sticky and thus require a primary contact layer in order to protect fragile skin [10].

Heavy exuding wounds

- Heavy exuding wounds present a high risk of infection and require specific dressings. Either hydrofiber dressings (e.g. Aquacel®, Convatec) or soft silicone foam with super-absorbers (e.g. Cutimed® Siltec, BSNmedical), able to absorb the abundant exudates, should be preferred. Soft silicone foams [e.g. Mepilex®, Mepilex® Transfer, and Advazorb Silflo® (Advancis Medical)] and polymeric membranes (PolyMem®, Ferris Mfg. Corp.) are also indicated [8,10,46,51]. The soft silicone foams are also suited for digits and folds. On the other hand, PolyMem® is not easily retained on the wounds and requires a secondary dressing to hold in place. Also Mepilex® Transfer needs a secondary dressing to absorb exudates.

Critically colonized and infected wounds

- To early diagnose a critically colonized or infected wound the following parameters and features should be considered:
  - ✓ wound history: several week duration, recent size extension and exudate increase;
  - ✓ wound bed: presence of debris, dead slough, friable tissue and bad smelling;
  - ✓ wound margins and surrounding skin: oedema, erythema, higher temperature than the healthy skin.
- In the presence of the above mentioned criteria, swabs for culture should be taken after washing the lesion with normal saline and then the treatment should be started based on clinical features [41].
- Wounds should be cleaned with mild antiseptics, such as chlorhexidine 0.1% or polyhexanide, sodium hypochlorite at a concentration of 5–10 ml in 5 liters of water, or acetic acid at ≤0.25% for 15–20 minutes/day [39,41].
- In case of lesions at risk of infection, the use of lipid-stabilized hydrogen peroxide cream (Crystacide®) has been proposed [41]. An aqueous solution of eosin (2%) is employed in some countries with the aim to reduce the exudate, keeping in mind that it has no antiseptic properties. In other countries, medical-grade honey in ointments (e.g. Mesitran S®, Medloc) or dressings (e.g. Algivon®, Advancis Medical; Medihoney®, Derma Sciences) are available and used with the aim to reduce the risk of infection and promote wound debridement [10,41,52,53].
- The use of silver-containing creams (e.g. silver sulfadiazine) or dressings (e.g. Mepilex®AG; Urgotul®silver/SSD; PolyMem®silver, Aquacel®Ag) has been advocated [10,41]. However, there is no clear evidence that silver-containing products can prevent wound infection or improve healing rates of leg ulcers [52 and references herein]. Importantly, silver plasma level should be checked in case of large surface and/or prolonged treatment because of the risk of silver absorption and related toxicity [54,55]. In children, the use of silver-containing products should be very limited in time and treated surface.
- The dressings for infected wounds are the same used for heavy exuding wounds, but they should be changed daily.
- Principles for the use of topical and systemic antibiotics/antimicrobials are summarized in Table 5 [8,41,56].

Table 5 Principles for use of antibiotics/antimicrobials in wound treatment

Topical agents	• Restrict the use to critically colonized and infected wounds
	• Prefer agents which do not have a systemic formulation (e.g. fusidic acid, mupirocin)
	• Use for short periods and rotate to avoid resistances and sensitizations
	• Consider retapamulin as a second line treatment for resistant Gram positive bacteria
Systemic agents	• Administer in multiple infected lesions
	• Start early in malnourished and/or non compliant patients and in infants
	• Prescribe antibiotics according to the result of culture
	• Prefer narrow spectrum antibiotics

Hyperkeratotic and crusted lesions

- Warty and crusted lesions require an accurate treatment and follow-up because they are itchy and can mask an underlying squamous cell carcinoma. The crusts and hyperkeratosis should be regularly removed. Frequent application of emollient creams and bathing twice a week are indicated to this purpose.

Exuberant granulation tissue

- Short courses of very potent topical glucocorticoid ointments are reported as effective in reducing the exuberant granulation tissue frequently observed in JEB [8,10].

General remarks

- The dressings of all types of wounds should be checked daily and the change frequency modified based on wetting and smelling.
- Paraffin-impregnated gauzes (e.g. Jelonet®, Smith & Nephew) or medicated gauzes (e.g. Fitostimoline® containing an aqueous extract of Triticum vulgaris, or Connectivine®, Fidia, containing hyaluronic acid) can be used when advanced dressings are not available [8,10]. They require a secondary dressing and should be changed on a daily basis, increasing wound manipulation, pain and indirectly also the risk of infection. These products adhere to the wound bed. In order to reduce pain and trauma, dressing removal requires prolonged soaking with distilled water or saline solution or bathing [8,10].
- In RDEB patients, finger and toe dressing should be regularly performed as described for the neonatal period, to delay digit fusion and pseudosyndactyly [10].
- Tubular bandages of various sizes and heights according to the affected body area (e.g. Elastomul®, Tubifast® or Self-fix®) should be used for dressing retention to prevent slipping and further trauma. Tight bandages must be avoided as they can induce blistering by rubbing the skin [8,10]. If available, Dermasilk® or other specifically designed garments, without silver, can also be useful to retain the dressings in place.

Itch management

Itching is common in EB patients with dry/atrophic skin, multiple warty lesions, during late phase of wound healing, or following sensitization to topical treatment. Pruritus may also develop in the absence of an identifiable etiology [8,10]. Itching is frequently chronic, severe and unresponsive to conventional treatments. Furthermore, a rare subtype of DEB, DEB pruriginosa, is characterized by onset of severe and unremitting pruritus from infancy to adulthood [57,58]. Itch-induced scratching damages the skin, thus increasing blistering and susceptibility to infection. General measures and therapeutic options to manage itch are summarized in Table 6 [8,10,59-64].

Management for surgical procedures

General principles

- Surgery in general anaesthesia should be limited to strictly necessary procedures and organized jointly

Table 6 Chronic itch management

General measures	• Bathing in tepid water with syndet/oil cleanser and skin hydration with emollients
	• Overheating and dry environment avoidance
	• Relaxation techniques and patient education to cope with the vicious itch–scratch cycle
Therapeutic options	• Short courses of topical mid-potency steroids
	• Sedating antihistamines (e.g. hydroxyzine) and/or tricyclics with anti-H1 antihistaminic action (doxepin) as first-line treatment*
	• Low-dose gabapentin (Neurontin®) or pregabalin (Lyrica®) as second-line treatment
	• Anti-inflammatory agents (e.g. cyclosporine, thalidomide or topical tacrolimus) to be cautiously considered as third-line treatment only in severe cases**

*Data from randomized trials are lacking to support the efficacy of antihistamines in pruritic conditions other than urticaria.
**Caution should be paid in using immunosuppressive drugs because of the carcinogenesis risk.

by the surgical team (surgeon, anaesthesiologist and nurse) and the EB team coordinator.
- Whenever necessary and feasible, the different surgical treatments should be performed at one time in order to reduce the risks linked to anaesthesia.
- A tailored management should be planned for each patient after a careful evaluation.

General measures

- When a surgical procedure in general anesthesia is planned, a multidisciplinary re-assessment should be performed a week or two ahead of the surgery date to verify the general health conditions of the patient [33].
- Blood sampling should be performed before surgery to evaluate and treat anemia.
- Before the procedure, the surgical team, including the anaesthesiologist and the case manager, should clearly explain the possible problems and complications linked to the procedure, paying particular attention to those related to EB disease.

Specific measures

- Anxiolytic administration can be helpful in the pre-operative stage.
- The measures to be adopted in the operating theatre are summarized in Table 7 [33-66].
- After surgery, the intravenous line should be kept in place as long as possible to be used for transfusion, perfusion or other systemic therapy (iron, albumin, antibiotics).
- Fiberoptic intubation appears to be a good technique to minimise frictional trauma and to reduce the risk of blistering, whilst safely securing the difficult airway [67].

Pain management

Pain is constant in EB patients since birth, and its management is a major therapeutic focus conditioning the daily care. A tailored approach should be planned for each patient considering the different types of pain, and the treatment efficacy should be evaluated regularly.

Table 7 Patient management in the operating theater

Procedure	Measures to be adopted
Operating table	• Place an anti-decubitus mattress and cushion on the table
	• Use the sheet to lift the infant and move him/her to the operating table; older patients should move themselves
	• Pad trauma-exposed sites (e.g. chin, occiput, elbows, heel, hands, feet)
Premedication	• Administer oral premedication 45 minutes prior surgery in order to reduce/prevent:
	✓ Patient anxiety (midazolam 0.5 mg/kg)
	✓ Oral secretion (atropine 40 mcg/kg)
	✓ Gastro-esophageal reflux (ranitidine 1 mg/kg)
	✓ Vomiting (metoclopramide 150 mcg/kg)
	• Prefer intravenous induction in presence of intravenous line, otherwise inhalational anaesthesia. In the latter case, protect the face from the mask with silicon foam (e.g. Mepilex®) or a water-based lubricant.
	• Protect the eyes with a moisturizing ophthalmologic gel and the eyelids with moistened gauzes
Patient monitoring	• Use tape with a silicon contact layer (Mepitac®) to fixe all tubes (e.g. endotracheal tube) and catheters
	• Lubricate all tubes with a water-based lubricant
	• Remove the adhesive part of electrodes allowing only the lubricated central portion to be in contact with the skin; then secure with a non adhesive dressing (e.g. Mepilex ®)
	• Use clip sensors for pulse oximetry
	• Use a lubricated disposable thermometer
	• Pad the skin with cotton or advanced dressings under the blood pressure cuff
	• Use bipolar diathermy to avoid a monopolar pad
	• Avoid carefully all kinds of trauma and friction for the entire duration of surgery
Intubation	• Evaluate microstomia, esophageal strictures and prominent incisors in RDEB* patients who need intubation
	• Prefer fiberoptic-assisted intubation to laryngoscopy in case of difficult intubation
Recovery room	• Administer a moderate sedation before emergence to avoid cutaneous lesions due to irritability
	• Perform tracheal aspiration gently using soft and small tubes

*RDEB, recessive dystrophic epidermolysis bullosa.

General principles

- Pain is acute, chronic and related to procedures (e.g. bathing, dressing, surgical procedures, etc.). Psychological pain and anxiety contribute constantly to worsen organic pain.
- Acute pain is mainly due to newly-onset mucosal lesions (cornea, oral cavity, oesophagus, anus or larynx and trachea).
- Chronic pain includes inflammatory, neuropathic and bone pain.
- The general conditions and nutritional status affect the severity of chronic pain.
- Evaluation of pain is mandatory and should address all the above mentioned components. It can be difficult in particular in children. Pain evaluation scales and frequency are the same used for non-EB patients and vary according to the patient age and on-going procedures.
- An EB expert should examine and listen attentively to the patient and his family in order to design the individual therapeutic strategies.
- An early adequate management of the physical pain is mandatory in order to reduce also the psychological pain component and to promote patient compliance.
- An early and regular psychological support for patients and families can contribute to the global efficacy of pain management.
- Unfortunately, in some cases, both pharmacological and psychological management strategies do not achieve complete pain control.

General measures

Pain related to nursing procedures

- Bathing and dressing should be performed in a room equipped with all the necessary materials prepared in advance and close at hand (Figure 1). Non-pharmacological treatments based on cognitive-behavioural techniques are essential. A quiet and relaxing environment is helpful (music, films, pacifier dipped in glucose solution, etc.). The caregiver should provide contact, caresses and sweet words. Hypnosis can be useful in older children and adults.
- The choice of pharmacological treatment depends on the patient age, psychological status, type and severity of pain and planned procedure. The time of drug administration before the procedure varies according to the type of drug and route [68-73].
- Topical anaesthetics (xylocaine, lidocaine-prilocaine) are recommended before the care of painful tense blisters or wounds and venipuncture. However, the total dose should be limited to prevent the risk of seizures and methemoglobinemia.
- Paracetamol is the first choice for mild pain and short procedures. In more severe pain and complex procedures, opioids are indicated (from codeine to oxycodone and morphine). Opioid side effects include constipation, pruritus and rarely respiratory failure. The development of tolerance leads to dose increase with risk of addiction [70-74].
- Hydroxyzine and midazolam can be associated to analgesics to reduce anxiety and for short sedation. More rarely, ketamine is also used, particularly in children [75,76].
- Meopa® (nitrogen monoxide-oxygen mixture) can be helpful in most severe pain both in children and adults. Its use is restricted to the hospital setting and limited in time.

Chronic pain

- General measures are essential (e.g. music, yoga, relaxation techniques, hypnosis, etc.). In most cases, they need to be combined with analgesics. Paracetamol is usually the first-line treatment, followed by opioids (codeine, morphine, etc.). Non steroid anti-inflammatory drugs (NSAID) should be cautiously administered in patients with chronic/severe infections.
- A neuropathic pain component can be managed with pregabalin (Lyrica®) or gabapentin (Neurontin®) [73]. Tricyclic antidepressants, e.g. amitriptyline, are an alternative treatment.
- The daily analgesic dose should be distributed over 24 hours and increased before any care procedure.
- Bone pain, usually observed in severe RDEB, is due to abnormal bone mineralization, in turn related to poor nutrition, reduced mobility and chronic inflammation. Therefore, the improvement of nutritional status and physiotherapy contribute to reduce pain. Biphosphonates are useful to decrease bone pain, but their administration can be limited by perfusion difficulties and side effects (e.g. mandible osteonecrosis).

Acute pain

- Reassure the patient and his family.
- Administer adequate analgesic therapy (frequently opioids) or increase the dose of the ongoing treatment.
- Local anaesthesia may be useful in case of painful constipation due to anal erosions or fissures. Botulinum toxin for anal sphincter relaxation may represent a valid alternative.

Psychological pain

- Acute and chronic pain induce psychological pain since the first days of life.
- An inadequate pain control during procedures may cause a vicious circle with a memorization of the physical pain, and then anticipation and psychological distress increasing the physical pain at each procedure. Relaxation techniques, psychological support and pharmacological treatment should be provided.
- Psychological support should be reinforced during adolescence. A latent depression is not exceptional in the most severe forms and appropriate treatments have to be administered.

Nutritional aspects

Growth and nutritional condition are major outcomes in EB patient care. Nutrition is often a real challenge. Blisters and erosions affecting oropharynx and oesophagus cause pain and dysphagia, followed by microstomia, ankyloglossia and tooth decay in severe RDEB. Altogether these manifestations contribute to reduce oral intake. Recurrent blistering can also lead to strictures and even complete oesophageal obstruction which are usually managed by endoscopic dilation [77-79].

On the other hand, protein-calorie and micronutrient needs are increased by (i) accelerated skin turn-over, (ii) blood and protein losses through skin wounds, (iii) recurrent infections, and (iv) chronic inflammation. Micronutrient deficiencies (iron, zinc, selenium, vitamins, etc.) can lead to severe complications. Iron, folate and vitamin B_{12} deficiencies contribute to multifactorial anemia typical of severe RDEB and JEB. Other nutrient deficiencies (carnitine, selenium) might play a role in inducing cardiomyopathy. In addition, an insufficient fluid and fibre intake frequently causes constipation, which can induce painful defecation (anal fissures). Overall, nutritional compromise is more important in generalized forms of RDEB and JEB [80-82].

Unfortunately, an improvement of nutrition in severe EB subtypes is usually not associated with a significant amelioration in wound healing rates. Nevertheless, an appropriate nutritional management is necessary since infancy also to promote pubertal development.

General principles

- The evaluation of patient growth, performed according to international standards (weight for length < 2 years; body mass index > 2 years), can be hampered by fixed contractures.
- The nutritional support should start early, especially in severe generalized subtypes.
- Dietetic advices, aimed to increase energy and protein content of oral food, should be addressed continuously to patients and their families.
- All factors affecting the quality of nutrition need careful management and follow-up: trauma related to hard food, dental caries and periodontal inflammation, gastro-oesophageal reflux, oesophageal strictures, inflammatory bowel disease, anal fissures and constipation, etc.

General measures

- Proteins and energy

Conventional dietetic approaches using oral high-energy and high-protein semi-liquid supplements rarely provide sustained improvement of dietary intake in severe EB forms. Consequently, children who survive without nutritional support become thin and short adults. A specific *T*ool to *H*elp *I*dentify *N*utritional *C*ompromise (*THINC*) in EB has been designed. The suggested nutritional requirements reach about 100-150% of the recommendations for healthy age- and gender-matched children for energy and 115-200% for proteins [81].

- *Micronutrient requirements* [81-87]

Evaluation of iron needs is frequently hampered by chronic inflammation. Daily intake of iron is recommended in case of hypochromic microcytic anemia; however it is often associated with gastric irritation, diarrhea or constipation. If oral supplementation is not tolerated and/or insufficient, intravenous administration (Venofer®, Ferinject®) should be considered and its frequency adapted to each patient. The use of erythropoietin or darbepoetin alfa in combination with iron supplementation has been proposed [85]. Vitamin requirements should be evaluated considering the disease type and patient age. In more severe forms, vitamin (A, C, D, E) levels should be checked at least once a year. Vitamin C supplementation is useful to enhance iron absorption. Vitamin D and calcium supplementation are needed to prevent/treat osteoporosis. Zinc, carnitine and selenium levels should be evaluated at least once a year in the most severe forms [88].

- *Nutritional procedures: nasogastric and gastrostomy feeding*

Nasogatric feeding can induce internal friction, irritation of nostrils and hypopharynx or oesophageal erosions. Therefore it should be used only for short periods in presence of severe oral cavity and pharyngeal blistering. The tube should be soft and of small size.

Gastrostomy feeding (GTF) has been shown to be well-tolerated and to improve patient nutritional outcome, growth and puberty. It should be performed in patients unable to feed orally (e.g. very severe and chronic oral lesions or oesophageal strictures not susceptible to dilation treatment) and/or presenting loss in weight and height of at least 1 standard deviation compared with their best growth level, despite regular nutritional advice. Starting GTF before malnutrition onset also reduces the problems linked to the choice of the button device and to the insertion site dehiscence [89-91]. A regular surveillance is necessary in order to prevent and/or early treat the possible local complications (chronic wound and infection).

The rhythm and rate of GTF delivery, volume, energy intake and formula concentration should be adapted to individual needs and tolerance and to patient and family lifestyle. The use of anti-secretory and anti-acid drugs (e.g. ranitidine or proton pump inhibitors) is recommended to treat gastro-oesophageal reflux and also to prevent skin damage due to gastric acid leakage at gastrostomy site [91]. GTF also easies the supply of micronutrients (iron, zinc, selenium, vitamins), nutritional supplements or drugs.

Oral feeding and swallowing skills should be continuously encouraged while using GTF. The patient should participate to "familial life" and familial meals. In all cases, a psychological support is essential. After the achievement of puberty development gastrostomy can be removed, provided a sufficient oral nutrition and absence of intractable oesophageal strictures. Unfortunately in JEB-Herlitz, GTF is not successful and thus not recommended in the context of palliative care [92].

Physical therapy and rehabilitation

Physical and occupational therapy must be started early in life in particular in EBS with muscular dystrophy, generalized RDEB and JEB subtypes. The continuing work on muscles and joints delays contractures and deformities, improves functional mobility, enhances patient autonomy and, ultimately, promotes social inclusion. Static (preventive) and dynamic (corrective) orthosis, directed therapeutic exercises and recreational activities are powerful tools. Some forms of physical medicine, such as hydrotherapy, are also useful [93,94].

Early diagnosis of squamous cell carcinoma (SCC)

SCC represents one of the major complications of EB, in particular generalized RDEB subtypes and, less frequently, generalized non-Herlitz JEB [5,12]. It occurs more often from the third-fourth decade of life. SCC usually arise in areas of chronic wounds and scars. The clinical presentation is frequently atypical with warty or ulcerated appearance. An early diagnosis is mandatory and literature data highlight that a diagnosis delay implies a poor prognosis.

In order to ensure an early diagnosis, it is necessary to perform [95]:

- whole-body physical examination, including the scalp, oral mucosa and genital area, every 6 months in RDEB and adult JEB patients;
- more frequent follow-up in presence of chronic hyperkeratotic or warty wounds;
- multiple excisional biopsies in case of crusted-warty skin lesions or chronic wounds unresponsive to proper treatments;
- early and wide excision of the lesion in case of histologically confirmed carcinoma.

Management of intercurrent or associated cutaneous diseases

A few reports describe cutaneous infectious diseases occurring in EB patients, and even fewer data exist about associated chronic inflammatory diseases (psoriasis, atopic dermatitis, etc.) [96-99].

Skin diseases, when manifesting in EB patients, can:

- represent a diagnostic challenge due to atypical presentation (impetigo, scabies, etc.);
- worsen EB course, due to the development of pruritus and risk of infection (e.g. atopic dermatitis, scabies, VZV infection, impetigo, etc.);
- need an adapted management which should take into account the presence of EB lesions and the increased risk of percutaneous absorption. Some topical products may indeed cause irritation and toxicity (e.g. topical treatment for cutaneous parasitic infestations, such as benzyl benzoate, permethryne).

When dealing with these intercurrent/associated diseases, the principles for diagnosis and therapy are:

- Pruritus onset/worsening in EB patients should foster investigation for parasitic infestation such as scabies and lice.
- Pruritus in associated cutaneous diseases should be treated as described for pruritus in EB patients (Table 6) in order to prevent worsening of EB lesions.
- Ivermectin represents a valid alternative to standard topical treatment for parasitic infestations in EB patients with generalized disease [96,97].

Therapeutic patient education

Therapeutic patient education, as defined by the World Health Organization (WHO), is a continuous process of patient-centered medical care, enabling patients affected

by chronic diseases, and their families, to better manage their illness [100]. Patient education has been shown to also contribute to prevent complications and to improve quality of life (QoL).

Despite the lack of controlled studies, patient education is unanimously considered extremely important also for EB patients and their caregivers.

Table 8 summarizes the principles and measures of therapeutic patient education applied to EB.

Care of disease burden

EB has a major impact on the QoL of the patient and his family, starting since birth when the baby diversity is immediately perceived by the parents and the transmitted notion of skin fragility can hamper the development of normal affective relationships within the family. Isolation, fear or insecurity about infant care, breastfeeding, where to go for help, role adjustment, fatigue, relationship with siblings or partners, body image, nutrition, and the need for peer support - all must be dealt with [101-107].

Specific problems can then manifest at every age, they range from the patient perception of his diversity to disease limitations in daily life and challenges related to social integration. Coping with continuous pain and consciousness of disease worsening represent major challenges for these patients and their families, in particular in severe disease forms.

General principles

- Whenever possible, the transfer of the newborn to the centre of expertise should be performed when also the mother is able to move, avoiding disruption of the close parent-infant relationship or even the infant refusal.
- A gradual and multistep delivery of information on diagnosis and prognosis can reduce the psychological trauma. Particular caution should be taken to avoid culpability feelings in the parents.
- The involvement of both parents in the education process may facilitate their coping with the disease, reduce couple difficulties and reinforce their relationship.
- The parents should be accompanied in the educational process of the affected child, at the same time ensuring that the child progressively acquires as much autonomy as possible.
- The participation of the entire family can reduce the risk that non affected siblings feel neglected by the parents.
- A psychological support to the patient and his family is frequently needed and should be integrated in the multidisciplinary management process.
- Monitoring of the emotional status of the patient and/or his family and early diagnose psychological distress require yearly appointments with a psychologist even in absence of specific symptoms.
- Specific instruments should be used for evaluation of psychological status and QoL [108-110].
- The psychologist should be involved early when the newborn parents manifest signs of persisting distress.
- Indications to the provision of psychological and psychotherapeutic support to the patient and family members are summarized in Table 9.

Continuity of care

A well-organized and structured continuity of care is important in EB like in all chronic and rare diseases. Following hospital discharge, EB patients require social support and medical assistance for EB-related and non-related problems. The center of expertise stays as the main structure offering specialized care to EB patients and, at the same time, should ensure an adequate liaison with the community healthcare system. Public health

Table 8 Patient education in epidermolysis bullosa: principles and contents

Principles	• Should be addressed to the patient, his/her family and caregivers
	• Should be delivered individually or in group
	• Should be adapted to the EB subtype, patient age, socio-cultural milieu and compliance
	• Should be delivered by specialized nurses with the support of the members of the multidisciplinary team and the psychologist
	• Should be performed orally and gradually, complemented by the release of information sheets for the patient and his/her family/caregivers
Contents	• Should at first clearly communicate the diagnosis, disease course and complications
	• Should give clear explanations on the need of an adapted genetic counselling
	• Should train the patient and his/her family/caregivers on the management of cutaneous and extracutaneous manifestations
	• Should educate the patient and his/her family/caregivers to early recognize infection signs and atypical aspects of the chronic wounds, and to consequently request a rapid evaluation by a dermatologist
	• Should provide training on the life style in order to prevent disease worsening

Table 9 Indications to psychological or psychotherapeutic support to the family member(s) and patient

Family members	• Fear to breastfeed or handle the newborn and/or infant refusal
	• Lack of self-confidence or inadequacy feeling in coping with the disease
	• Anxiety to be left alone with the disease
	• Depression or disease refusal by one the two parents
	• Altered relationship of the couple (e.g. lack of interest in carrying out activities as a couple, loss of intimacy, negative impact on sexuality, etc.)
	• Culpability feelings and inability to take care of the non-affected children
	• Discomfort feelings or depression of the siblings
Patient	• Stress or depression related to the visibility of disease manifestations and the feeling of being different
	• Chronic pain exacerbated by daily care procedures
	• Chronic itching resistant to therapy
	• Stress or depression due to limitations in daily activities and social life
	• Lack of compliance and adherence to treatment, particularly in
	• Adolescence and adulthood

and support services, both professional and peer, vary greatly country by country and even within the same country region by region. Nevertheless, some general rules can be drawn. At hospital discharge:

- a detailed referral form must be delivered and addressed to the primary care physician (pediatrician or general practitioner). It must report the diagnosis and the care given during hospitalization, describe the treatment plan for patient home care, the follow-up schedule and report the contact details of the EB team coordinator or his/her delegate from the center of expertise (e.g. specialized nurse) and, whenever available, of hotlines/call centres for emergency or urgent professional information;
- whenever foreseen by national laws, a certificate stating the diagnosis and a treatment plan must be addressed to the relevant public health authority in order to ensure free-of-charge care and provision of needed drugs, dressings and devices;
- depending on the national laws, ad hoc certificates must also be addressed to the public health service in order to guarantee homecare by specialized nurses, and if necessary also psychological support, physical therapy, occupational therapy, assistance by social workers, etc.;
- in countries where specialized EB nurses are not available, ad hoc training of the community health nurses is recommended;
- information sheets should be provided to the family/caregiver (relatives, friends, teachers, colleagues, etc.) in order to promote an adequate relationship with the patient, to explain the impact of the disease on daily activities and QoL (education, work, household chores, life management);
- information about the opportunity to get in touch with the patient association, if present in the country, should be released as detailed below.

The relationship with the patient association

In most countries, DebRA is the EB patient association. All national DebRA belong to an umbrella organization known as DebRA International (www.debra-international.org).

- Patients should be informed about the presence of the patient association in their country and the interest to become a member.
- Patient associations contribute to improve patient access to information, reference centres, and social services.
- They also facilitate contact between patients and sharing experience regarding daily life.
- In some countries, they provide financial support and/or fund nurse home care and/or organize vacations for patients and families.
- Finally, they can contribute to promote professional training and research.

Summaries

The optimization of EB patient healthcare requires the implementation of a wide range of measures. Towards this goal, the establishment in each country of expertise centres, which guarantee a multidisciplinary care, is essential. Equally important is the sharing of standards of care among expertise centres. The present recommendations should easy this process, support clinicians involved in EB care and, overall, contribute to improved patient care and QoL. Nevertheless, multicentre trials are needed, in particular to standardize interventions in wound care, itch and pain management, treatment of pseudosyndactyly and prevention and therapy of

squamous cell carcinoma [38]. Finally, recent progress in the development of different gene, protein and cell therapy approaches open new perspectives for the treatment of these patients. In addition to the pilot study published by Mavilio and coworkers showing the feasibility of ex-vivo gene therapy in generalized non-Herlitz JEB [111], the results of clinical trials based on the use of (i) allogenic fibroblasts for local RDEB wound care [112,113] and (ii) allogenic hematopoietic stem cell/mesenchymal cell transplantation for severe RDEB forms [114] have been recently described. In particular hematopoietic stem cells transplantation has been reported to result in significant disease improvement, but not cure, in the majority of treated patients and further studies are ongoing to minimize the severe risks associated with transplantation procedure and to optimize the treatment protocol [114]. These results indicate that effective and specific EB treatments able to block disease progression are likely to become available in the medium term.

Consent

Written informed consent was obtained from the participants for publication of this review and accompanying images, with additional parental written consent from those under 18 years of age.

Abbreviations

EB: Epidermolysis bullosa; EBS: Epidermolysis bullosa simplex; DEB: Dystrophic epidermolysis bullosa; GTF: Gastrostomy feeding; JEB: Junctional epidermolysis bullosa; KS: Kindler syndrome; QoL: Quality of life; RDEB: Recessive DEB; SMARs: Silicone medical adhesive removers.

Competing interests

MEH has received travel support from MölnIycke and Pierre Fabre. GT has received travel support from Pierre Fabre. GZ, EBL, AC, CBu, SHR, AD, CFG, AHM, RDLL, MDV, GS, CDR, SLM, CBo have no competing interests.

Authors' contributions

MEH, GZ, CBo decided the topics to be developed and the methods to be employed, wrote the first recommendation draft and supervised the entire process of recommendation elaboration. EB and AC equally contributed to recommendation preparation: EB performed the literature review and contributed to «care of the EB newborn and infant», «EB care from childhood to adult», «management for surgical procedures», «pain management», «nutritional aspects»; AC performed the literature review and contributed to the «wound care», «skin care», «itch management», «continuity of care», and «management of intercurrent or associated diseases» topics. CBu contributed to «management for surgical procedures», «pain management» topics; SHR contributed to the «care of disease burden» topics, and revised the entire text; AD performed the literature review and contributed to the «wound care», «skin care» topics; GT contributed to «diagnosis of squamous cell carcinoma» and «therapeutic education» topics; CDR contributed to the «care of disease burden» topic; GS contributed to the part on care of newborn and infant; CFG contributed to the «skin care» and «wound care» topics; AHM and RDLL revised the entire text, and contributed to the «occupational therapy» topic and wrote the conclusions; MDV revised the entire text; SLM contributed to the literature review and revised the entire text. All authors have seen and approved the final manuscript.

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WILEY Pediatric Dermatology

Inpatient management of children with recessive dystrophic epidermolysis bullosa: A review

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Abstract

Recessive dystrophic epidermolysis bullosa is a disorder marked by skin and mucosal blistering after minimal trauma. Even the most routine procedures in the hospital, if done incorrectly, can precipitate extensive skin loss, pain, and scarring. Most providers have little experience working with patients with this degree of skin fragility. When a person with recessive dystrophic epidermolysis bullosa is admitted to the hospital, there are multiple considerations to keep in mind while strategizing an effective care plan: avoidance of new blisters with a "hands-off" approach; careful consideration of all indwelling devices; symptomatic management of pain, itch, and anxiety; coordination of dressing changes; aggressive treatment of skin infections; environmental and staffing considerations; and awareness of other chronic complications that affect care, such as anemia, malnutrition, and chronic pain. To minimize discomfort for patients with recessive dystrophic epidermolysis bullosa during the hospital stay, inpatient care teams should understand these considerations and modify the care plan accordingly. Prior preparation by the hospital facility and inpatient care team will facilitate the delivery of safe and effective care and greatly improve the overall patient experience.

KEYWORDS
epidermolysis bullosa, health care delivery, immunobullous disease, quality of life

1 | INTRODUCTION

Inherited epidermolysis bullosa (EB) is a heterogeneous group of chronic skin disorders characterized by fragility and blistering of the skin and mucous membranes. EB is complex and multisystemic in severe subtypes. For individuals with recessive dystrophic EB (RDEB), even the most routine procedures, such as moving the patient or measuring vital signs, can precipitate blistering and extensive skin loss.

Most providers outside of EB specialty centers have limited knowledge about the accommodations and specific handling techniques that these individuals require. Although there are guidelines for the general care of children with RDEB, there are none specifically for care in the inpatient setting.[1,2] The purpose of this review is to provide a practical resource to help facilitate inpatient admissions and safe and effective day-to-day treatment on the hospital floor for this vulnerable group.

The first half of this review will provide an overview of the clinical presentation of RDEB and commonly associated complications. The second half will review general inpatient management, including safe patient handling, initial patient assessment, and inpatient wound care for individuals with RDEB.

2 | PATHOGENESIS

Mutations in the gene that encodes collagen VII weaken the structural adhesion within the skin, allowing the skin layers to separate with only minimal trauma, resulting in blisters and erosions.[3]

3 | CLINICAL PRESENTATION AND ASSOCIATED COMPLICATIONS

Wounds can occur anywhere on the body. Blistering is often worse in areas subject to repeated trauma, such as the hands, feet, and bony prominences (Figure 1).[4] Chronic wounds can lead to scarring, joint contractures, pseudosyndactyly (mitten hand deformity), and greater risk of cutaneous squamous cell carcinoma.[5]

3.1 | Pain and itch

Pain is an almost constant symptom in RDEB patients and can severely affect quality of life and complicate daily activities.[6] Acute pain results from the formation and expansion of bullae and the irritation of erosions, in addition to anal fissures and reflux.[6] Sources of chronic pain include chronically inflamed wounds, joint contractures, bone pain, and constipation.[6]

Individuals with RDEB can experience severe and debilitating itching, which can originate from healing wounds or intact skin.[7] The mechanism underlying the itch in RDEB is poorly understood, but it is likely that it is due to the disease itself, as well as certain triggers such as inflammation, concurrent opioid use, heat, sweating, and stress.[7] Controlling itch is particularly important because chronic scratching can result in trauma and blister formation.

3.2 | Infection

The bacterial burden of a wound exists on a spectrum, starting at one end as contamination, with the potential to progress to colonization, critical colonization, and ultimately frank infection.[8] Contamination and colonization are normal states and require no treatment, but critical colonization, a state in which the bioburden is enough to impair wound healing, should be treated with topical antimicrobials.[8] To minimize antimicrobial resistance, systemic antibiotics are typically reserved for frank infections. The diagnosis of infection and appropriate treatment are discussed in a later section in this review.

FIGURE 1 Clinical presentation of recessive dystrophic epidermolysis bullosa: (A) right lateral back, (B) buttocks, (C) left arm, (D) right knee. Diffuse erosions and scarring typical of a patient with recessive dystrophic epidermolysis bullosa. Blistering can be worse in areas subjected to repeated trauma including the (B) buttocks, (C) elbows, and (D) knees

The most common culprit organisms are *Staphylococcus aureus*, *Streptococcus* species, and *Pseudomonas aeruginosa*.[1,8] Wound infection is generally diagnosed clinically according to wound size, exudate, odor, pain, surrounding erythema, and edema,[8] but these classic signs of inflammation can be diminished or obscured in chronic EB wounds.[8]

Systemic infections are less common than cutaneous infections but can be lethal because of chronic malnutrition and a weakened immune system and most often arise from cutaneous infection.[2]

3.3 | Nutrition

Maintaining adequate nutrition is paramount because malnutrition can impair wound healing,[9] but management of nutrition is complicated in EB because of high caloric demand secondary to accelerated skin turnover, blood and protein loss through wounds, recurrent infections, and chronic inflammation.[2,9] Low intake secondary to dysphagia and constipation compounds the risk of malnutrition.[2,9] Iron; zinc; selenium; folate; and vitamins A, D, and B6 deficiencies have been observed in association with EB.[2] Some of these deficiencies have been implicated in impaired wound healing, osteoporosis, and cardiomyopathy.[2] Mixed anemia secondary to iron deficiency and chronic inflammation is frequent in individuals with EB and may also contribute to impaired wound healing.[9,10]

3.4 | Gastrointestinal

The gastrointestinal tract is one of the most common sites of extracutaneous complications in EB.[11] Wounds in the oral cavity and esophagus can lead to odynophagia, dysphagia, unwillingness to eat, and reflux.[11] Dental caries and premature loss of teeth can complicate oral hygiene and feeding.[12] In the small and large bowel, wounds can cause protein and blood loss, contributing to anemia, hypoalbuminemia, hypoproteinemia, and malabsorption.[11] Anal erosions and fissures result in painful defecation and constipation, further decreasing willingness to eat.[11] Chronic blistering can lead to strictures and cause ankyloglossia, microstomia, dysphagia, chronic constipation, and megacolon.[11]

3.5 | Ocular

Corneal abrasions and blistering may occur because of the fragility of the conjunctiva and cornea.[13] Chronic corneal wounds can precipitate scarring. In the operating room, skin contractures may prohibit complete closure of the eyes, putting the person at risk of corneal damage.[14]

3.6 | Cardiac

Dilated cardiomyopathy is a rare complication of EB and is probably due to multiple factors, including micronutrient deficiencies (especially selenium and carnitine), chronic anemia, iron overload from transfusions, and viral myocarditis.[15]

3.7 | Renal and genitourinary

Blistering along the genitourinary mucosa can lead to dysuria.[16] Chronic blistering can lead to strictures and urethral meatus stenosis, which can result in urinary retention, bladder distention, hydroureter, and hydronephrosis.[16]

3.8 | Psychiatric

Depression is common in individuals with EB, who at times can have suicidal ideations or gestures.[17] They may also experience anxiety and posttraumatic stress disorder secondary to painful dressing changes. Social isolation secondary to the visibility of their skin involvement is common.[18]

4 | OVERVIEW OF INPATIENT MANAGEMENT

Successful inpatient management of an individual with RDEB requires a multipronged approach to care. Avoidance of new blisters is critical and is best done with a hands-off approach to patient handling. The use of any indwelling medical devices should be carefully considered, because insertion and removal can precipitate trauma. Symptoms of pain, itching, and anxiety are common in individuals with RDEB and should be regularly assessed and treated. Caring for an individual with RDEB can be a significant time commitment and may require certain staff members to become "specialized" in dressing changes. Dressing changes should be carefully coordinated to minimize discomfort. Skin infections are common and should be treated aggressively, as they can lead to life-threatening systemic infections. The team should be aware of the chronic complications commonly associated with RDEB that can affect care, such as anemia, malnutrition, and chronic pain.

5 | EMERGENCY DEPARTMENT CONSIDERATIONS

When an individual with RDEB is received in the emergency department, the most appropriate service to admit them to needs to be considered. In the United States, hospitalist services, for example, are likely to be the most experienced in coordinating inpatient care among consultants and tend to have more availability on the unit. Depending on the reason for admission and the severity of the illness, individuals with RDEB may be admitted to intensive care units, surgical services, or specialty services. Furthermore, this decision will differ for different countries according to the typical distribution of specialty trainees within ward services. Second, although we review general handling procedures below, patients will benefit from carrying a letter or card that outlines individualized care instructions to help facilitate and orient new caregivers.

6 | AVOIDANCE OF NEW BLISTERS

A major portion of inpatient care for RDEB is dedicated to preventing new blisters. Although completely preventing new blisters is impossible, adhering to the following suggestions can minimize the risk of developing new wounds and greatly increase patient comfort throughout the hospital stay (Figure 2).

6.1 | Pressure relief

Pressure areas are particularly at risk of rapid wound development.[4] A pressure-redistributing mattress should be used for the duration of the stay (Repose, Frontier Medical Group, Blackwood, Caerphilly, UK; AccuMax Quantum, Hill-Rom, Batesville, IN; Rest-Q, Comfortex, Winona, MN).[4] If the person is scheduled for surgery, a padded operating table should be used or the table should be lined with sheepskin.[19] Any furniture that will support the person's weight at any point during the hospital stay should also be padded, including the toilet seat, bath chair, and bed railing.[4] Egg crate padding can be cut to cushion these items.

6.2 | Patient handling

Given the skin fragility and propensity to form blisters in individuals with RDEB, handling can be a challenge; a hands-off approach is advised whenever possible.[4] This is not to say that the person should be ignored. Essential care needs to be provided, potentially in a consolidated manner. When handling is unavoidable, several general management principles should be followed to minimize trauma (Figure 2):

- Before handling the person, apply a thin layer of ointment on gloves and medical devices that will have direct contact with patient skin.[20]
- Apply firm but gentle pressure; avoid shearing forces.[20,21]
- When moving the person, lift instead of sliding.[20,21]
- Avoid applying any kind of adhesive directly on the person's skin. If adhesives are accidentally used or are required to secure access, they can be removed safely using medical adhesive remover (Niltac, ConvaTec, Deeside, Flintshire, UK; Uni-Solve, Smith & Nephew, London, UK; Detachol, Ferndale Labs, Ferndale, MI).[20,21]
- Avoid rubbing of the skin.[21]

6.3 | Patient monitoring

Many of the aforementioned principles should be applied to modify the monitoring setup (Figure 2). Electrocardiographic lead adhesive pads should be removed and leads secured with gauze wrap or nonadhesive dressing (Mepitel, Mölnlycke Health Care, Gothenburg, Sweden; Silflex, Advancis Medical, Nottinghamshire, UK; Adaptic, Acelity, San Antonio, TX).[2,21] An oximeter clip probe should be used instead of an adhesive sensor.[2] Before taking blood pressure, several layers of nonadherent padding should be placed between the blood pressure cuff and skin as a cushion.[2] If monitoring of temperature is required, axillary probes are preferred because oral probes may cause oral blistering.[20] Indwelling urinary catheters should be avoided if possible because of the risk of developing urethral strictures. If urinary catheters are necessary, they should be well lubricated before insertion.

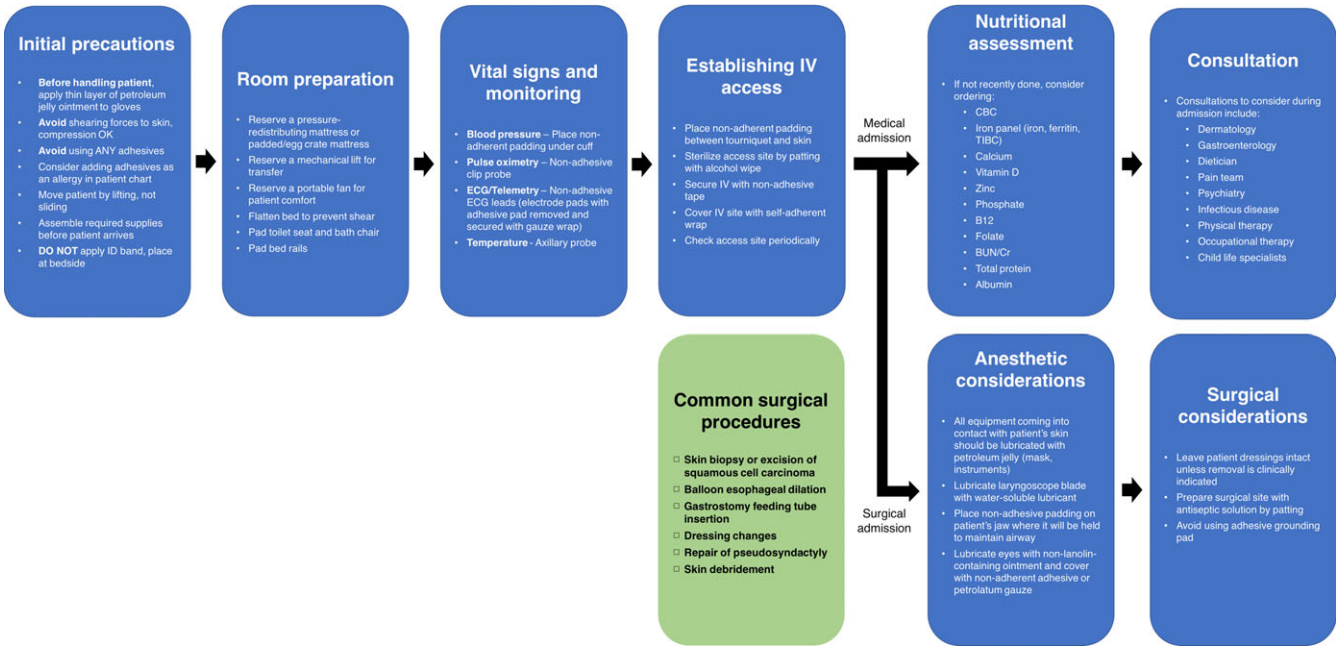

FIGURE 2 Medical and surgical admissions flowchart. Medical and surgical admissions begin with similar preparatory steps but diverge after establishment of intravenous access

6.4 | Indwelling medical devices

Finding and maintaining vascular access can be particularly challenging in individuals with RDEB. Visualization and palpation of their veins can be extremely difficult. The most experienced providers are often needed to secure intravenous (IV) access; consultation with anesthesia or vascular access teams may be necessary. It is important to wrap multiple layers of nonadhesive padding around the limb before placing any tourniquet device.[22] The access site should be sterilized by patting rather than rubbing with an alcohol wipe. The line should be secured with nonadhesive tape and covered with self-adherent wrap.[20] IV lines tend to dislodge easily in individuals with EB, which can be emotionally and physically distressing for the patient and staff, so periodic monitoring is required.[20] When IV placement becomes a problem, finding oral alternatives to medications, if possible, should be attempted.

Central venous access may be preferable in cases in which a long-term hospital stay is anticipated and IV access is necessary. The benefits of establishing central venous access, including less potential trauma from repeated skin puncture and provision of a convenient access site, should be weighed carefully against the greater likelihood of systemic infection. As with peripheral access, central lines in individuals with RDEB are prone to catheter migration and dislodgement. In addition to securing the line with nonadhesive tape and self-adherent wrap, anchoring sutures can be placed for further support.[23] Placing sutures through the full thickness of the skin, deep to the cleavage plane, may minimize secondary trauma. It has been reported that a cuffed line is more secure than an uncuffed line in individuals with RDEB.[23] Tunneled lines are also safe to use, although femoral access should be avoided if possible.[2] Percutaneous IV central catheters are an alternative that allow for long-term access by securing on an extremity instead of a central location.

6.5 | Operating room considerations

Cutaneous dressings should be left in place unless removal is necessary (Figure 2).[20] To protect the eyes, a non-lanolin-containing ointment can be used as lubrication.[24] The eyes should then be covered with nonadherent adhesive or petrolatum gauze.[25] While preparing the surgical site with antiseptic, patting motions should be used instead of the typical rubbing motions.[20]

6.6 | Airway management

Microstomia, limited neck mobility, and ankyloglossia can all complicate airway management in RDEB.[24,25] Noninvasive ventilation should be avoided because it can precipitate facial trauma. Intubation using a fiberoptic bronchoscope is preferred because it can be less traumatic to the oral mucosa than direct laryngoscopy.[25] Endotracheal tubes should be half to one size smaller than predicted to avoid overinflation and trauma.[25] All equipment coming into contact with the person's skin or mucosa, including the facemask and laryngoscope blade, should be well lubricated.[14,25] Nonadhesive padding should be placed on the jaw before manipulation.[14] Endotracheal tubes should be secured using cotton tape.[17] For a more comprehensive overview regarding anesthetic and surgical considerations, refer to the referenced articles.[14,20,25]

7 | INITIAL ASSESSMENT

7.1 | Pain and itch

A modified version of the World Health Organization approach to pediatric pain management can be used to treat acute pain in individuals with RDEB (Figure 3).[26] With small wounds or minor pain, nonopioid analgesics (eg, acetaminophen, ibuprofen) can be used alone or together.[26] For moderate or severe pain, an opioid analgesic (eg, morphine) should be used,[26] although opioids can worsen pruritus and constipation.[11] Anxiety can exacerbate anticipatory pain, so anxiolytics such as diazepam and lorazepam taken before a painful procedure may be helpful.[27] When possible for painful or frightening procedures such as biopsies, provide adequate anxiolysis (eg, oral midazolam), local anesthesia, or other forms of conscious sedation (moderate or deep). Conscious sedation, with appropriate bedside monitoring, can be effective and timely, helping avoid general anesthesia and minimizing time in the operating room.

For chronic pain, many individuals with RDEB use long-acting opioids to maintain a base level of comfort.[6] Tricyclic antidepressants and gabapentin have been used successfully in managing chronic wound pain in EB.[6,28] Additionally, nonpharmacologic therapies, including distraction, visualization, and other forms of cognitive behavioral therapy, have been recommended.[6]

For itch, topical emollients may be useful.[2] Topical corticosteroids have been used with some degree of success, but providers should be wary of the greater systemic absorption in individuals with EB because of impaired barrier function.[2,29] Although it is not thought that histamines cause the itching in EB, antihistamines such as doxepin can be tried for their sedative properties, especially before sleep,[1] although they should be used with caution because they can exacerbate dry eyes and corneal erosions.

7.2 | Nutrition

As mentioned previously, individuals with RDEB are at risk of developing malnutrition, which in turn will impair wound healing.[9] Because of the gastrointestinal complications associated with RDEB, many children will have had gastrostomy tubes placed for long-term nutritional supplementation.[7] If the person has not had nutritional laboratory tests performed in the last 6 months, the team should consider ordering those listed in Figure 2. If the results suggest underlying malnutrition, supplementary nutrition with nasogastric or gastrostomy tube feeding is recommended. Consultation with a nutritionist is important for each hospital admission.

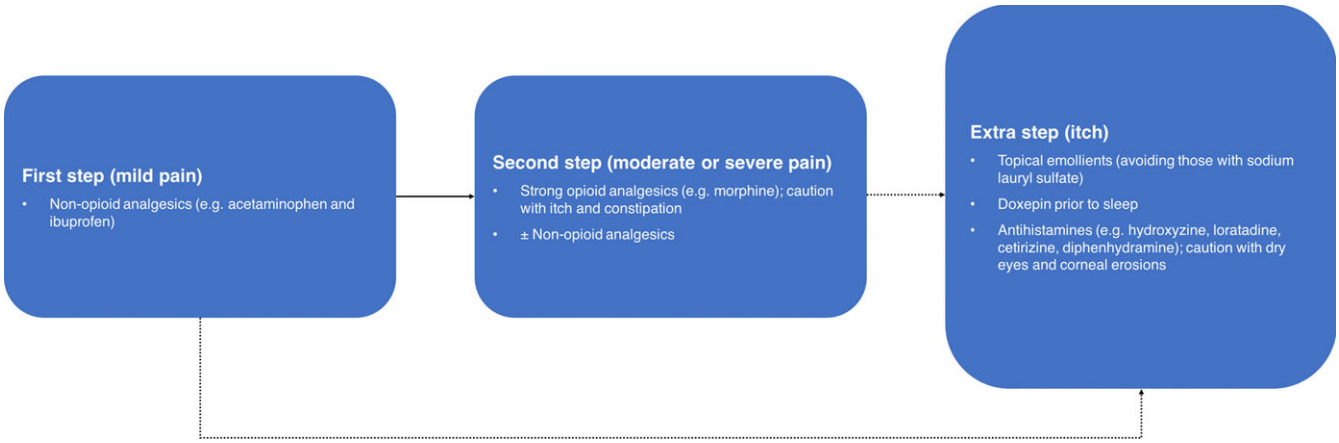

FIGURE 3 Pain and itch management flowchart. This approach is based on the World Health Organization's approach to pediatric pain management, which was modified to include an additional step for itch management. The dashed lines indicate that itch management does not necessarily have to follow pain management in a stepwise fashion

7.3 | Consultation

Care for individuals with EB requires a multidisciplinary team.[2,30-32] Consultation with the inpatient teams outlined in Figure 2 should be considered during every admission. The child life specialists, in particular, are an important team to consult. They play a crucial role in the care team, explaining indwelling devices to patients and parents, providing nonpharmacologic pain relief through distraction or relaxation techniques, and providing much-needed companionship.

8 | GENERAL WOUND CARE

In individuals with RDEB, proper wound care and dressing technique are important for several reasons. Dressings protect the skin as a physical barrier, reduce the risk of wound infection, and promote an environment conducive to wound healing.[21] A properly dressed, noninfected wound will typically heal gradually over time. Any nonhealing wound lasting longer than 6 months should be assessed for squamous cell carcinoma.[30]

8.1 | Dressing regimen

The specific aspects of a wound care regimen, such as frequency of dressing changes and types of dressings used, vary from person to person depending on several variables, including extent of disease involvement, wound location and characteristics, patient preference, and the presence or absence of infection (Figure 4). Most regimens will include a nonadhesive primary dressing, which provides the contact layer (Mepitel, Molnlycke Health Care, Gothenburg, Sweden; Urgotul, Urgo Limited, Shepshed, Loughborough, UK; Silflex/Siltac, Advancis Medical, Nottinghamshire, UK; Adaptic Touch, Acelity, San Antonio, TX). Secondary dressings can be placed over primary dressings to provide additional cushion and to absorb exudate (Mepilex, Tefla, Medtronic, Minneapolis, MN; Polymem, Ferris Mfg. Corp., Fort Worth, TX). Lastly, the dressings are typically reinforced with tubular bandages or self-adhering wrap. Details regarding specific dressing types are outside the scope of this article but can be found in other comprehensive references.[1,21] In adapting a wound care regimen to the inpatient setting, it is important to solicit patient and family preferences. Individuals with RDEB and their caregivers have had a lifetime of experience optimizing their wound care regimen to best prevent injury and maximize comfort,[4] but in certain situations it will be necessary to make changes to a person's preferred wound care regimen to optimize wound healing. In these cases it is important to engage the person and family in dialogue to negotiate a wound care plan that is acceptable to them and the care team.

8.2 | Gastrostomy tube site care

Gastrostomy tube sites should be dressed in a fashion similar to that of the rest of the skin. In the case of leakage from the gastrostomy site, sterile saline should be used for cleaning and a topical barrier applied to minimize further irritation.[21] A superabsorbent secondary dressing can help contain leakage and allow the site to heal gradually.[21]

8.3 | Patient comfort

Procedural pain management is an important topic to discuss with the person and caregivers because dressing changes can be a major contributor to discomfort.[6] Providers can further contribute to comfort by maintaining a warm room temperature and taking precautions to ensure privacy.[4] Preparing dressings beforehand by unwrapping them, cutting them to shape, and adding petroleum jelly ("buttering") will also facilitate the dressing process. To preserve patient autonomy, the care team should discuss with the individual how much

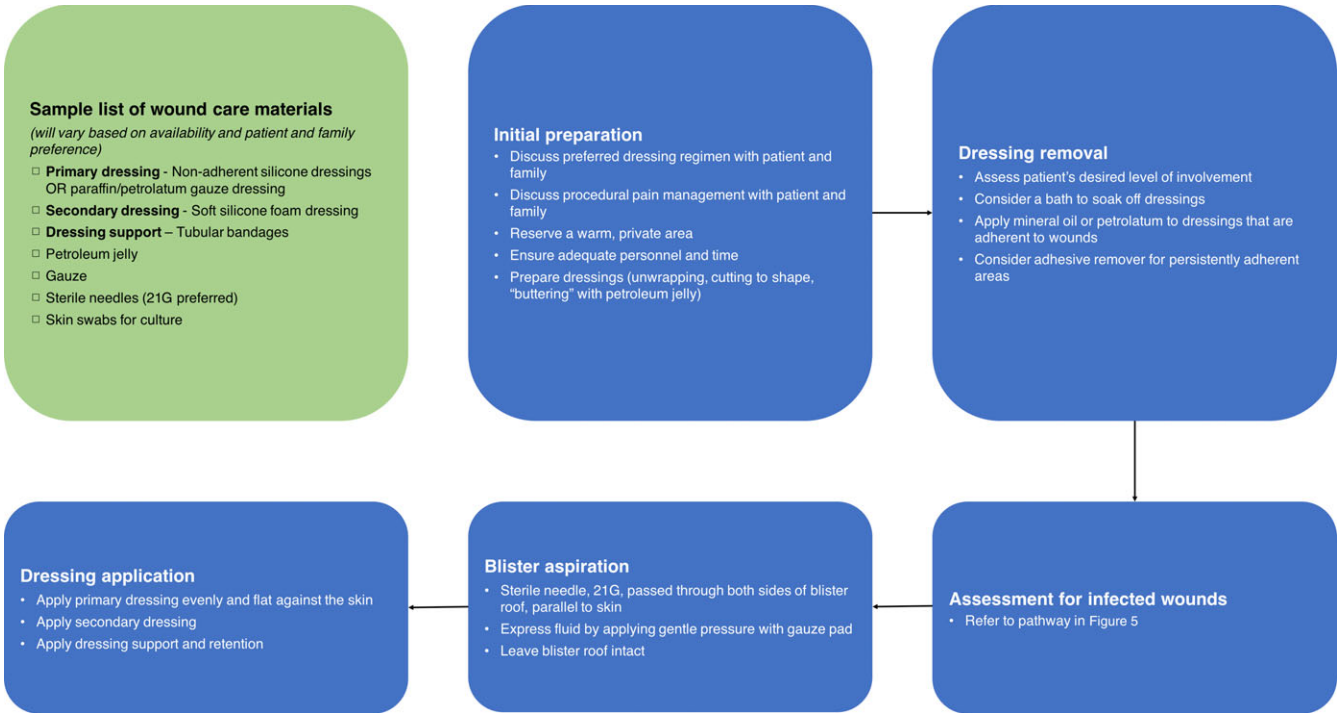

FIGURE 4 General inpatient wound care flowchart. General inpatient wound care begins with preparation of the person and the environment, followed by dressing removal, assessment of infected wounds, blister aspiration, and dressing application. Assessment of a potentially infected wound is further elaborated upon in Figure 5

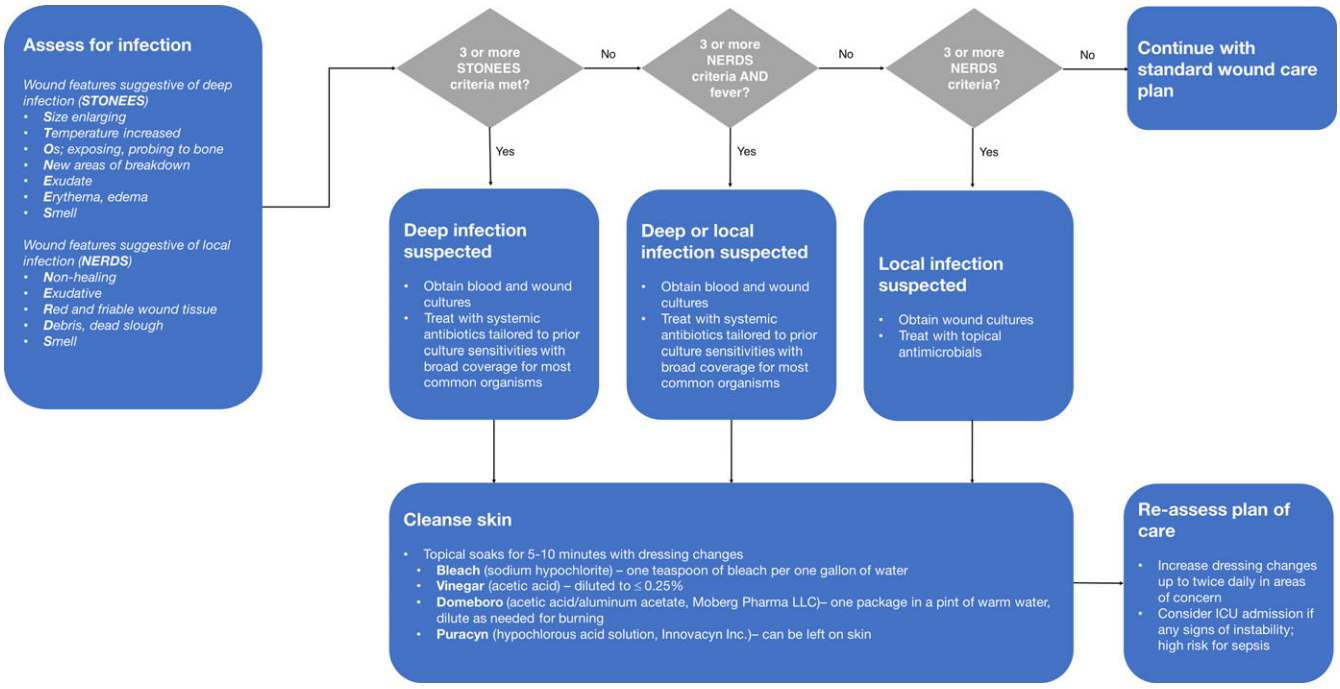

FIGURE 5 Wound infection management flowchart. Treatment of an infected wound will depend on whether a superficial skin infection or a deep skin infection is suspected. If wound infection is suspected, the skin should be cleansed after cultures are obtained. ICU, intensive care unit

involvement he or she wants in the dressing changes. In academic settings, privacy and clinical care must be carefully balanced with the unique learning opportunity that the person could provide to learners of all levels.

8.4 | Staffing considerations

The time commitment for dressing changes is significant in inpatient care because one-on-one nursing is often required for several hours.

It is our experience that a consistent approach to dressing changes increases compliance and facilitates the dressing process. Thus, asking for dedicated staff who are able to specialize in dressing changes and form a primary nursing team can be helpful. Caring for a patient with RDEB can be distressing not only for the patient, but also the staff involved. As an example, the warm room temperature and wound odor during dressing changes can make for a taxing working environment.[4] Awareness and management of psychological trauma is therefore essential to keep these team members effective.

8.5 | Bathing

There is no established standard of care regarding bathing frequency.[21] While in the inpatient unit, we recommend bathing or cleansing every day to every other day during dressing changes.[2,19] Removing dressings during a bath may make the dressing change process more comfortable because the bathwater can help dissolve adherent crusting.[27] Tub water can be supplemented with vinegar (7.5 L of 5% acetic acid or 11.5 L of 3% acetic acid in a full 160-L bathtub) or bleach (120 mL of bleach in a full bathtub) to reduce microbial burden and reduce the risk of infection.[2,7,8] Vinegar and bleach have been shown to have antimicrobial properties for Gram-negative and Gram-positive bacteria, respectively.[33,34] Salt (900-1000 g in a full bathtub) can be added to the water to create an isotonic solution and decrease pain.[7] A whirlpool bathtub, if available, allows for concurrent gentle wound debridement.[19] If a bathtub is unavailable, a shower with a cushioned shower seat is also an acceptable option.[7]

8.6 | Blister management

Blisters should be sterilely lanced and drained to prevent blister extension.[1] Using a large-gauge sterile needle, puncture the blister through the blister roof, parallel to the skin. Multiple puncture sites followed by gentle pressure with sterile gauze can be used to facilitate drainage. Leave the blister roof in place to minimize infection risk.[2]

8.7 | Managing infection

Patients should be assessed for infection during each dressing change because skin infection impairs wound healing and can lead to life-threatening systemic infection.[1,19] Distinguishing a superficial from a deep skin infection is important because the latter necessitates more aggressive treatment (Figure 5). NERDS (nonhealing, exudative, red or bleeding, debris, smell) and STONEES (size increasing, temperature > 3°F above normal, os [probes to or exposes bone], new areas of breakdown, erythema or edema, exudate, smell) are two mnemonics that may help providers clinically assess for wound infection, as they describe the clinical features of superficial and deep skin infection, respectively.[35] Although these mnemonics have not been validated in wounds related to EB, they have been validated for use in chronic wounds and recommended for use in EB in an expert consensus statement.[1,35]

If three or more of the STONEES criteria are met, the person will require a systemic agent.[1] Similarly, if three or more NERDS criteria are met, and the person exhibits systemic symptoms (fever, malaise), he or she should be treated using a systemic agent.[1] Systemic agents should begin with broad coverage for the most common organisms, including *S. aureus*, *Streptococcal* species, and *P. aeruginosa*.[7] Current and past bacterial culture results should then be used to tailor coverage.[1]

If three or more of the NERDS criteria are met, but the person does not have systemic symptoms, the wound should be treated with topical antimicrobials to decrease microbial burden.[1] Lipid-stabilized hydrogen peroxide cream has broad antimicrobial coverage and is well tolerated in individuals with RDEB.[8] Silver sulfadiazine also has a broad spectrum of activity, although it should be used for only a short period of time because argyria has been reported in individuals with RDEB with prolonged exposure to silver.[8,36] Topical antibiotics, including gentamicin and mupirocin, can be effective in the short term but should also be used cautiously in longer hospital stays to avoid the development of microbial resistance and adverse events from systemic absorption.[22,37]

If infection is suspected, the wound care plan should be modified appropriately. The frequency of dressing changes to the area of concern may need to be increased to prevent irritation secondary to excess wound exudate.[21] The wear time for the specific type of secondary dressing used will dictate how frequently dressings will need to be changed, because some manufacturers recommend changing when exudate is observed on the outer surface of the dressing and some recommend changing when wet or heavy.[21] Additionally, infection can amplify wound pain, so the pain regimen should be adjusted accordingly. Deep sedation with IV propofol and ketamine has been used successfully for dressing changes and deep whirlpool baths in individuals with extensive wound infection.[38]

9 | CONCLUSION

Individuals with RDEB experience complications in multiple organ systems, which complicates life inside and outside of the hospital. To minimize discomfort for these individuals during a hospital stay, inpatient care teams will need to factor in the multiple considerations addressed in this text while strategizing the care plan. Prior preparation by the hospital facility and inpatient care team will facilitate delivery of safe, effective care and greatly improve the overall experience of an individual with RDEB.

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Dressings used in epidermolysis bullosa blister wounds: a review

There is little rigorous evidence on the management of epidermolysis bullosa, so management is based on the patient's and clinician's preferences. However, there is a consensus that advanced dressings help promote healing and reduce pain

epidermolysis bullosa; dressings; wounds; synthetic dressings; pain

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Epidermolysis bullosa (EB) is a heterogeneous group of inherited skin conditions caused by various defects in the basement membrane zone of the epidermis. There are three main types:

- Epidermolysis bullosa simplex (EBS) — characterised by mutations in keratin, with the blister originating from the epidermis
- Junctional epidermolysis bullosa (JEB) — characterised by defects in the lamina lucida, an electronlucent line beneath the epidermis
- Dystrophic epidermolysis bullosa (DEB) — characterised by a defect in collagen type VII, with tissue separation occurring in the dermis at the level of the anchoring fibrils (Fig 1).

Epidermolysis bullosa is estimated to affect 2–20 per million, depending on the subtype.[1] The principal characteristic is mechanobullous skin lesions (variable sized, fluid-filled bullae) resulting from minimal trauma. The severity of these lesions ranges from minor blistering on the hands and feet, to generalised blistering resulting in infant death, depending on the subtype.[1]

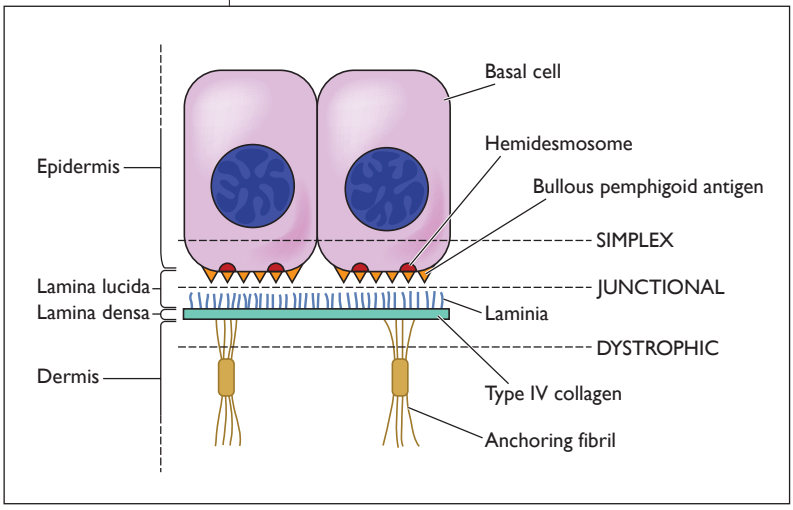

Fig 1. Ultrastructure of the basement membrane zone, demonstrating the three types of EB, as defined by the level of cleavage.

Skin management is mainly supportive and predominantly involves good wound care, which is based on the practitioner's experience, institutional preference and patient preference.[2,3] There is no universal standard of practice in caring for EB blister wounds and no dressing of choice.

This literature review explores the evidence on dressing types and their effectiveness in promoting the healing of EB wounds.

Method

The following databases were used to perform two main searches for all relevant articles up until October 2008: Ovid Medline (R), Cochrane Database of Systematic Reviews (CDSR), American College of Physicians (ACP) Journal Club, Database of Abstracts of Reviews of Effects (DARE) and Cochrance Controlled Trials Register (CCTR).

The first search (A) yielded 31 results using key words 'epidermolysis bullosa' and 'dress$', and the second search (B) yielded 29 results using key words 'epidermolysis bullosa, wound$, and care'. Both searches were limited to the English language and excluded papers containing the key word 'anaesthesia', to eliminate irrelevant papers. There were nine duplicates. It was not possible to eliminate all irrelevant papers using the database, so this was done manually. Exclusion criteria included:

- Subjects who did not have EB
- Articles that did not comment on or review any topical dressings.

Results

The database yielded mostly level IV evidence (defined as case series, post-test, or pre-test/post-test studies with no control groups), based on National Health and Medical Research Council (NHMRC) guidelines.[4]

Fifty-one results were identified from the database. Twenty-nine articles (57%) were excluded. Of the remaining 22 articles, eight related to synthetic dressings, eight to biological dressings and six were review articles (Table 1). Biological dressings are

Table 1. Levels of evidence from the articles identified

		Search A	Search B	Total
Included articles				
Level III	Trials of EB subjects plus synthetic dressings[9,14]	2	0	2
	Trials of EB subjects plus biological dressings[26-31]	3	3	6
Level IV	Reviews of non-randomised controlled trials with EB subjects plus general* dressings[2,3,34,35,37]	1	5	6
Level IV	Case reports of an EB subject plus synthetic dressings[5,7,8,11,10,20]	5	1	6
	Case reports of an EB subject plus biological dressings[32,33]	2	0	2
Total no. of included articles		**13**	**9**	**22**
Excluded articles				
EB subjects, but not associated with dressings[6,13,38-57]		10	12	22
Not EB subjects but associated with dressings[12]		1	0	1
Not EB subjects and not associated with dressings[58-63]		3	3	6
Total no. of excluded articles		**14**	**15**	**29**

* Reviews not specific to any particular dressing category

reviewed in Table 2, synthetic dressings in Table 3 and review articles not specific to any particular dressing category in Table 4.

Discussion

Many dressing options exist for EB blister management but determining which dressing regimen is most effective is problematic. While wound healing is the primary outcome, clinicians, carers and patients also seek effective dressing regimens that are comfortable, minimise symptoms such as pain and re-injury of skin during dressing changes, are easy to apply and remove, and are cost-effective. Some suggestions can be drawn from the evidence, but the studies are predominantly low-level evidence (levels III and IV). Given that the available evidence is inconclusive, dressing selection is inevitably driven by the patient's and practitioner's preference, particularly when adult patients are involved.

The difficulties lie with the variation in study designs and the diverse dressing types used. Each study has an independent set of outcome markers. While these are similar, different scales or questionnaires are used to measure them as there is no unifying assessment tool. Furthermore, the relatively low incidence of EB makes large studies difficult to perform, and all types of EB would need to be represented, irrespective of the subtype.

Several new-generation synthetic dressings combine a number of properties for various wound conditions. Based on extensive clinical experience, the ideal dressing for an EB wound is:

- Absorbent
- Semipermeable or occlusive
- Non-adherent
- Atraumatic
- Bioactive when a low-grade infection is present.

Potential toxicity from absorption of medicaments needs to be taken into account — for example, the release of silver ions from a dressing can cause argyria (silver toxicity resulting in silver deposition in the skin).

Most of the regimens in our review comprised a primary layer, padding and bandage. The padding provides a boundary to protect vulnerable skin,[5,6] while the bandages keep the dressings in place.[6-8]

Urgotul (Urgo), a lipidocolloid dressing, was found to improve quality of life in 55% of patients, reduce healing times, relieve pain at dressing change and improve dressing application.[9]

Soft silicone dressings, such as Mepilex and Mepitel (Mölnlycke), were also well tolerated, improved healing, reduced peri-wound maceration and enabled patient independence.[10,11] These dressings are absorbent, have foam borders to prevent peri-wound injury, and promote a moist healing environment to aid epithelialisation.[12] Omiderm (Bradley Pharmaceuticals), a temporary polyurethrane skin substitute, has a transparent membrane layer to enable wound inspection. Mepitel, with its fenestrations, enables application of ointments without the need to remove the dressing and interrupt the healing process.

Silicone has been used as an occlusive dressing to prevent hypertrophic scarring and promote wound healing since the 1960s.[13] Hydrocolloid occlusive dressings increased re-epithelialisation rates in EB, especially when the blister roof was left intact.[14] Cling film achieved closure in a non-healing chronic EB wound, creating an occlusive environment.[10]

Topical therapy can be incorporated into any dressing regimen as needed. Simple emollients including paraffin and hydrogel dressings help maintain a moist wound environment. Paraffin is a non-allergenic substance that creates an occlusive barrier between the wound and the external environment, although there have been no randomised controlled trials (RCTs) on its effects on wounds and atopic dermatitis.[16] Simple petrolatum ointments improved pruritic symptoms and scar erythema when compared with topical onion extract *Allium cepa*.[17]

Adhesive removers, such as Appeel (Clinimed), can facilitate atraumatic removal of tapes when their use has been unavoidable.[15]

Hydrogel softens hard, dry eschar by autolytic debridement[18] and increases re-epithelialisation.[19]

Antimicrobials, such as povidine-iodine, cadexomer iodine, hydrogen peroxide, acetic acid, silver compounds and honey, help to reduce bacterial load

Details of the outcome measures for all of the studies listed in Tables 2–4 are available direct from the authors

Table 2. Articles reviewed on synthetic dressings

Ref.	Level	Dressing	Wound	Design	N	Results	Study limitations
Blanchet-Bardon et al.[9]	III	Urgotul	EBS, DEB	Open non-RCT	20	55% of patients felt their QoL improved. Of the 152 dressings applied, 95% were easy to very easy to apply, and 35% took less time, 45% no difference in time and 20% more time; 98% were easy to very easy to remove; 87% were removed without soaking and 13% needed soaking; 87% did not require analgesia; 91% were pain free at dressing change. Mean healing time was 8.7 days ± SD 8.5; 75% were more comfortable; 95% would use it again	Evaluation compared patients' previous experiences with other unspecified dressing regimens
Eisenberg[15]	III	Hydrocolloid, TELFA, paraffin gauze	RDEB	Open non-RCT	3	Best healing time obtained with hydrocolloid (3 days) versus 12.6 days with paraffin gauze ($p<0.001$) and 4.2 days for TELFA ($p<0.01$). Hydrocolloid was atraumatic and did not cause discomfort in any wounds. TELFA did not cause discomfort unless the dressing adhered over a joint area. Paraffin gauze was adherent and painful	Small sample size. Good quantitative outcome measures. Qualitative measures not clearly defined
Fletcher[10]	IV	PRE: potassium permanganate baths; SSD and gauze to sloughy areas; gauze and wool pads, tubular bandages, conforming bandages; chlorhexidine gauze; paraffin gauze POST: cling film	DEB	Case report	1	Cling film reduced exudate leakage. Dressing application time reduced to 25 minutes (previous time not stated). Increased ease of removal	Small sample size. Highly subjective. Outcome measures not assessed
Hall[5]	IV	PRE: gauze; cling film POST: Mepitel; Mepilex Transfer	RDEB	Case report	1	Mepitel and Mepilex Transfer were most effective in reducing pain, providing comfort and protection, were easier to apply and had the best healing rate	Small sample size. Highly subjective. Outcome measures not assessed
Hon[7]	IV	PRE: Betadine; Bactigras; Melolin; Mepitel; light bandage POST: Activon Tulle with Mepitel and Edypse	RDEB	Case report	1	Activon Tulle promoted wound healing within 15 weeks	Small sample size. Qualitative study
Lapioli-Zufelt et al.[11]	IV	PRE: non-adherent dry dressing; hydrogels; paraffin gauze; foams POST: Mepitel	EB	Case report	1	Mepitel did not adhere to the wound. It maintained a moist environment, was easy to use, conformed to the body contours and achieved healing in three days	Small sample size. Qualitative study. Outcome measures not assessed
Sagi et al.[20]	IV	Omiderm	DEB	Case report	1	Effective against skin infection, allowed penetration of topicals and was transparent	Small sample but provides good evidence to support use of Omiderm in other populations eg, burns
Weiner[8]	IV	PRE: lubricants; rolled gauze; tubular retention bandages POST: Mepilex Transfer	JEB	Case report	1	One week's use of Safetac technology resulted in significant healing of a chronic non-healing wound, with reduced pain and irritability. Healing was demonstrated in two photographs, taken one week apart, but no other parameters were measured	Small sample size. Qualitative study. Descriptive account of disease and dressings. Healing not evaluated quantitatively

EB = epidermolysis bullosa; DEB = dystrophic epidermolysis bullosa; RCT = randomised controlled trial; RDEB = recessive dystrophic epidermolysis bullosa
TELFA (Kendall) is a non-adhesive, oxygen-permeable, perforated, plastic film covered by an absorbent layer; Eclypse is a soft, highly waterproof, absorbent dressing[7]

Table 3. Articles reviewed on biological dressings

Ref.	Level	Dressing	Wound	Design	N	Results	Study limitations
Campiglio et al.[26]	III	Epidermal degloving; full-thickness graft; allogenic *in vitro* cultured keratinocytes to de-epithelialised wounds*	RDEB	Open non-RCT	13	Reports 90% skin graft take, good thumb abduction but no statistical data given; complete finger extension in 5/13 cases. Mean recurrence-free interval of 42 months	Good sample size. Outcome measures not clearly defined and results are lacking. Healing not evaluated quantitatively
Falabella et al.[27]	III	Fenestrated graftskin (Apligraft) with vaseline gauze, TELFA, elastic bandage, stocking net	RDEB, EBS, JEB	Open non-RCT	15	69 wounds assessed; graftskin applied on on day 1, week 6, week 12 and week 18. 79% of wounds remained healed. 10/14 reported healing was faster and 12/14 that it was less painful compared with past experience. No signs of acute graft rejection. No abnormalities in blood. Apligraf more effective than conventional dressings	Good quantitative markers of outcome assessed. Subjective comparisons made to patients' past experiences in relation to pain and healing time. No adverse events reported
Fimiani et al.[28]	III	General	EB	Review and case report	N/A	Homologous skin grafts and skin bank products can be used effectively in EB to reduce hand contractures and achieve epithelial covering, with good integration and fewer relapses	Overviews biological products in all wounds types. Statement on EB patients supported by only one paper: Campiglio et al.[26]
Fivenson et al.[29]	III	Apligraf with Mepitel or Adaptic foam, gauze, compression wrap	EBS-DM, EBS-WC, JEB-HT	Open non-RCT	9	90–100% healing or take by 5–7 days with wound sites normal by 2 weeks. Reduced pruritis, pain, bleeding, wound care and improved ambulation and manual dexterity. Most sites remained blister free. Electron microscopy 6 weeks' post-graftskin application showed partial resolution of baseline pathologic changes, with diffuse distribution of keratin microfilaments	Good study evaluating quantitative and qualitative outcomes. 1/9 patients with JEB-HT (aged 4 months) died of respiratory failure after 17 days with unhealed wounds. No graft-skin rejection. One wound infection. Repeat grafting needed in 3 areas due to trauma
Hasegawa et al.[30]	III	Amnia	RDEB-HS	Prospective non-RCT	3	Total re-epithelialisation in 2–10 weeks	Small sample size. Mainly qualitative study
Sibbald et al.[31]	III	Human fibroblast-derived dermal substitute	RDEB	Prospective non-RCT and case report	6	55 wounds assessed. 80–100% coverage by weeks 1 and 2. Improved wound protection, healing and symptom relief. Mean epidermal coverage by week 8 was 74%	Small sample size but good quantitative measures. Qualitative outcome measures not assessed but improved symptom relief claimed. One adverse event
Gould et al.[32]	IV	Lyophilised porcine dermis	JEB-HT	Case report	1	The porcine dermis dressing was absorbed into the blister base creating a seal in 40% of the treated area	Small sample size. Outcome measures not assessed as child died of aspiration
Martinez Pardo et al.[33]	IV	Amnia	DEB	Case report	1	Improvement, with better pain control and increased mobility (subjectively assessed by patient); spontaneous epithelialisation and low infection rates based on negative culture swabs	Small sample size. Mainly qualitative study. Epithelialisation rates not measured quantitatively. No adverse events

RDEB = recessive dystrophic epidermolysis bullosa; EBS = epidermolysis bullosa simplex; JEB = JEB junctional epidermolysis bullosa; EBS-DM = epidermolysis bullosa simplex – dowling meara; EBS-WC = epidermolysis bullosa simplex – weber cockayne; JEB-HT = junctional epidermolysis bullosa – herlitz type
Amnia = a membranous sac that suspends the embryo in utero
* Sheets of skin cells grown *in vitro*

Table 4. Articles reviewed on general dressings

Reference	Dressing	Results	Study limitations
Abercrombie et al.[2]	Mepitel; Mepilex; Urgotul; Aquacel; Aquacel Ag; Algivon; Activon Tulle; ActiForm Cool	Acknowledges variable dressing options. Selection based on practitioner, patient, cost and wound location. Mepitel and Urgotul recommended, but with no supporting evidence; Mepilex good for heavily exuding wounds; Aquacel, Aquacel Ag, Algivon have antimicrobial properties; ActiForm Cool is antipruritic	Overview of Mepitel, Mepilex and Urgotul. Reports dressing options but does not favour any one dressing
Brust et al.[34]	General	Recommendations: lift infants via back and buttock; lance large blisters; use soft towel or air dry using hair dryer on low-setting post-bathing; rotate topical antibiotics every 2–3 months as required; non-adherent dressings eg, rolled gauze, elastic tubular dressings; aluminium chloride to reduce sweat and discomfort; other topicals: bacitracin, fusidic acid, sulphadiazine; premedication with analgesia before dressing changes	An update on subtypes of EB with a section on wound management. Recommendations based on clinical experience. Evidence provided only supports rotating topical antibiotics to prevent resistance
Lin[35]	General	Recommendations: soak off dressings; lubricate; lift infants via back and buttock; lance large blisters; use soft towel or air dry using hair dryer on low setting post-bathing; rotate topical antibiotics every 2–3 months as required; use non-adherent dressings eg, rolled gauze, elastic tubular dressings; use aluminium chloride to reduce sweat and discomfort	A broad overview of complications of EB with a section on wound management. Recommendations are based on clinical experience. Evidence provided only supports rotating topical antibiotics to prevent resistance
Pai et al.[36]	General	Recommendations: avoid trauma; use ventilated shoes; saline compresses for blister skin; allografts and skin equivalents	Update on EB subtypes with a section on skin care but no recommendations on synthetic dressings. Comments on evidence for allografts in the short term and skin equivalents eg, Apligraf
Pillay[3]	General	Makes general recommendations on how to use non-adherent dressings. Author provides a list of commonly used dressings including Mepitel, the Mepilex range, Urogtul and Urgotul SSD	Paper focuses on subtypes and multi-system complications. Summarises dressing options but does not favour any one dressing
Schober-Flores[37]	General	Non-infected wounds: Mepitel; Mepilex; Mepilex Border; Dual-Dress Extra; Normlgel Impregnated Gauze; TELFA/ TELFA Clear; Exu-Dry; Vaseline gauze; Apligraf. Infected: Mepilex; Dual-Dress Extra; Acticoat; Exu-Dry Topical ointments: Vaseline; Aquaphor; hydrogels	No evidence. Recommendations based on clinical experience at University Hospital Denver, Colorado, US

All papers were review articles on patients with EB and were not specific to any particular dressing category

and prevent or treat low-grade topical infections.[7,10,11,20] These have been shown to be effective against a broader range of bacteria and are less likely to create resistance or patient sensitivity compared with antibiotics.[21] Topical antibiotics, such as mupirocin, can be added to the regimen for infected chronic wounds. Some of these substances, such as silver, have been incorporated into advanced dressings.

Interactive dressings have been shown to improve healing time when compared with the antimicrobial agent silver sulphadiazine (SSD) — for example, Mepitel, when used on burn scalds, reduced healing time and eschar formation, thereby preventing infection.[22] In one case study, use of a honey-impregnated gauze healed a chronic wound that had been resistant to treatment with light bandages, povidone-iodine, Bactrigras (Smith & Nephew), Melolin (Smith & Nephew) and Mepitel, improving healing time by 60% ($p<0.001$).[7] No studies compared old with new regimens. A deodorising effect with honey was shown.[23]

Various antibacterial properties were demonstrated with honey: elimination of eschar for-mation and colonising bacteria ($p<0.01$) and reduced exudate and oedema; it also promoted a moist wound environment conducive to re-epithelialisation.[23-25]

For chronic non-healing wounds, biological dressings seem promising.[26-33] Application of dermal skin substitute to chronic EB wounds achieved complete epithelialisation within two weeks, while 74% of patients had an average of eight weeks of epidermal coverage before a re-injury took place.[31] Fenestrated

Table 5. Our dressing guidelines for EB wounds

Wound	Dressing	Topicals
Ulcers (depth, pain, exudate infection, chronicity)	Mepitel Medicinal honey Mepilex range	
Superficial erosions	Mepilex range	Hydrogel or paraffin gauze if wound is dry or dressings stick
Intact skin requiring protection from friction and shear	Mepilex range	
Intense pruritus Hypergranulation	Mepitel Mepilex range	Methylprednisolone 1%
Prevention of digital webbing	Mepilex, Mepilex Lite, Mepilex Transfer	

Guide to using soft silicone dressings
Mepitel allows for visual inspection of the affected areas without disturbing the erosion/ulcer. It also allows for reapplication of ointments/creams etc., without removing the dressing and disturbing the healing process
Light to moderate exudate: Mepilex or Mepilex Border (waterproof) or Mepilex Ag (if heavier microbial colonisation)
None to minimal exudate: Mepilex Lite (waterproof) or Mepilex Ag (if heavier microbial colonisation)
None to light exudate for large (>20cm) areas, or difficult-to-dress areas ie, underarms/groin/digits: Mepilex Transfer

graft skin (Apligraf) has been demonstrated to heal up to 80% of wounds within 1–2 weeks.[27,29]

Furthermore, benefits exist for treatment of severe hand deformities associated with recessive dystrophic epidermolysis bullosa, which result from recurrent injury and scarring. Campiglio et al. demonstrated good tolerance of a hand protocol involving brachial plexus anaesthesia, dynamic splinting and allogenic keratinocyte sheets, which improved extension in 5/13 cases.[26] Good return of thumb abduction, opposition and grasping was also reported, but the authors did not provide statistical evidence to support this.

While these newer biological dressings do not provide a cure, the duration that the patient has without a chronic wound significantly improves their quality of life, avoiding the need for dressing changes, eliminating pain, reducing wound complications such as infection and hand deformities, and reducing carer burden.[26-33]

The literature reviewed does not favour any one dressing option for patients with EB. The studies do make recommendations, but these are generally based on:

- The preference and previous experiences of the individual patient[5,7,8,11]
- Practitioner experience.[2,34-37]

Patients report overall better satisfaction with newer generation dressings, such as Mepilex, Mepitel, Urgotul and Omiderm, than with more traditional dressings (gauze, cling film, hydrogel, paraffin gauze, foams, rolled gauze, tubular retention dressings).[5,8,9,11,20] This increased satisfaction reported with newer dressings results from their multiple features — not only do they accelerate healing but they also prevent peri-wound maceration and re-injury, reduce infection, are easier to apply and remove, and are more comfortable.[8-11,20]

Conclusion

Despite the limited clinical evidence available, it seems that the newer generation of dressings plays an important role in EB care. A large-scale RCT comparing new and old generation dressings would be almost impossible to conduct, given the rarity of the condition and the large number of subtypes and clinical variants. Recruiting a sample with burn wounds would be a more feasible alternative for a RCT. Outcome measures would need to be both qualitative (pain, quality of life, patient preference) and quantitative (size, healing time, infection rates).

Until a larger scale study is performed, we will need to rely on our clinical experience and the preference of patients to guide and determine management of EB wounds. In our clinical setting, both patients and clinicians favour soft silicone technology, despite the lack of supporting high-level evidence (Table 5). ■

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debra
for people whose skin doesn't work we do

Epidermolysis Bullosa practical care guidelines

Adult Surgical Procedures

Guidelines originated by Adult Nursing Team

DEBRA is the only charity supporting people living and working with EB (Epidermolysis Bullosa) – a rare genetic condition which causes the skin to blister and shear at the lightest friction, or even spontaneously.

Our purpose

We have a vision of a world where no one suffers from EB.

Until that day, we offer specialist care to those who need it.

We give support to people and families affected.

And we provide real hope for the future by funding pioneering research which will one day find a cure.

Our service

We provide information, practical help and professional advice through our Nursing and Social Care teams.

In partnership with the NHS, DEBRA's Specialist Children's and Adults' Nursing teams work throughout the UK, providing individual specialist healthcare advice and support to both people with EB and their carers, both in the community and in specialist hospital centres in London, Birmingham and Scotland.

DEBRA's Social Care team works with individuals and families, providing information, advice, advocacy and support on issues such as benefits and finance, housing, education and employment, thereby empowering and enabling people with EB to make their own life choices.

Details for the Nursing and Social Care teams, all DEBRA literature, including our 'In Touch' newsletter, information about our Holiday Homes, local or general meetings, are available on our website or through the DEBRA offices.

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These guidelines were originally generated for adult patients under the care of the DEBRA adult EB team & St Thomas' Hospital, London. We would be very happy to offer general advice, however your patient may already be under the care of another EB team. If so, please contact them directly (contact details on back page).

Guidelines for the practical care of adult patients with Epidermolysis Bullosa during surgical procedures.

Aim

To provide all staff involved with the care of patients with Epidermolysis Bullosa (EB) undergoing surgical or invasive procedures with clear guidelines and advice to ensure best practice at all times. This is in line with the WHO safe surgical checklist guidance of 2009[5].

Rationale

EB is a group of rare genetically determined disorders characterised by excessive susceptibility of the skin and mucosa to blister even after trivial shear forces and mechanical trauma. Management of those with EB is often complex and undergoing even routine procedures has the potential to compound their already difficult condition. Whilst in hospital there is a risk of significant skin or mucosal damage and secondary complications as a result of undergoing routine general procedures.

Introduction to EB

There are 4 main subtypes of EB:

EB Simplex, Junctional EB, Dystrophic EB and Kindler's Syndrome.

It is those affected by Dystrophic EB who will be seen most frequently as they may require, as a consequence of their disease, frequent diagnostic or therapeutic procedures under general anaesthetic.

Common surgical procedures include repair of syndactyly ("mitten glove" deformity), release of contractures, dental extraction, oesophageal dilatation, formation and repair of gastrostomy sites, excision of Squamous Cell Carcinoma, skin grafting and limb amputation.

The EB patient is the expert in managing the condition and will guide health professionals wherever possible. However, they are most vulnerable when asleep as they are unable to self-advocate or advise staff about necessary precautions to be taken[3]. Forward planning and communication is the key to a successful outcome.

Pre-Assessment Guidance

Patients with EB have a number of important issues to address in the pre-operative evaluation. If possible, seeing these patients in consultation a week or two ahead of the operative date is useful because it allows data to be collected and consultation to occur in an unhurried manner that does not risk delaying surgery[6].

Obtain records of previous anaesthesia	Valuable source of information regarding optimal management of the patient with EB undergoing the procedure.
Full Blood Count U&E Clotting Screen	For taking blood samples a gentle pair of hands is often better than a tourniquet. Iron deficient & anaemia of chronic disease are common. Renal & cardiac dysfunction may be found in EB.
Assess for possible renal & cardiac complications	May be present in EB & pre-operative echocardiogram should be considered.
BMI	Malnutrition & low body weight & BMI are frequently seen.
MRSA screen Infection control	Treat as per local guidelines. Infection related to compromised skin integrity & poor immunity related to malnutrition & chronic disease is common in EB. Treat as per local guidelines & prophylactic antibiotics should be considered.
Gastro-Oesophageal Reflux Disease is common & there is a high risk of aspiration	Patients with EB have a higher risk for gastro-oesophageal reflux[6] Antisecretory/mucosal protectant prophylaxis may be required. Occurrence of oesophageal strictures is common & anatomically these develop high in the oesophageal tract. Those with oesophageal strictures may have pooled secretions & particulate matter that put them at risk of aspiration[6].
Review recent or long term corticosteroid use	Systemic & topical use.
Airway assessment	Microstomia & limited mouth opening, fixed & scarred tongue, limited neck movement due to contractures, poor dentition & oral blistering are all common features. Dental caries & restorative dental work may be extensive. For detailed advice please contact the EB nursing team.
Musculoskeletal assessment	Extensive contractures & osteopaenia/osteoporosis may be present. This may result in difficulties achieving optimum procedural positioning.
Psychological preparation	Reassurance & full explanation of the procedure is essential. Contact the EB Psychotherapist via EB office if appropriate.

Pre-Operative Preparation and Anaesthetic Management

Contact EB Adult Nursing Team	For specialist advice & support during admission (see details below). In addition Dermatology Outreach Nurses may provide practical help with dressings.
Identity bracelets	Apply with extreme care – ideally over a protective dressing or tubifast.
"Handle with Care" stickers	Available from EB team – ensure these are placed on all patient notes & (if patient consents) they can also be applied to gown as an easy visual reminder.
Anti embolitic management	Avoid TEDS. Flowtron boots are recommended where available.
Supply of suitable dressings & Silicone medical adhesive remover e.g. Apeel® or Niltac® (or a 50/50 preparation) should be taken to theatre with patient	To avoid inappropriate use of adherent dressings & ensure the safe removal of any dressing, tape or monitoring stickers that may be inadvertently applied.
Moving & Handling Issues Pressure Relief	Request assistance & guidance from the patient as appropriate. Minimise the number of transfers. e.g. anaesthetise in operating theatre to avoid at least one episode of patient transfer[2]. Transfer using "lift and place" approach[1] – never slide. Use of "Pat Slides" is strictly contraindicated. Gloved hands in contact with the skin can cause damage to fragile skin – where feasible gloves should be well lubricated. (Take care to ensure gloves/hands are free from lubrication when handling equipment). EB Nursing team will provide advice appropriate to each individual regarding safest transfer – use of the *HoverMatt*® is highly recommended for all lateral transfers – contact the EB office or nursing team to arrange use. Use KCI RIK operating table pads for maximum pressure relief.

Skin	Blisters & erosions may be present & dressings should be left in situ wherever possible. If removal of dressings is unavoidable, cling film may be used as a temporary covering to the skin.
Skin preparation	Avoid rubbing or stroking the skin. Cleansing fluid can be poured over limb & patted dry or a cleansing swab can be placed on skin, gentle downward pressure applied & then removed.
IV access	Use gentle pressure to distend veins & aid cannula insertion. If a tourniquet is used this should be well padded. Secure cannula with Episil® or Mepitac® tape & k-band®. In addition, the skin beneath the cannula should be protected from trauma e.g. with Mepilex Transfer®, Mepilex Lite® or similar non-adherent dressing. To secure central & arterial lines suturing should be considered.
Eyes	Never tape the eyelids – instead close gently & then cover with Geliperm® hydrogel sheet. Eyelid contractures may be present. There is a risk of corneal abrasion.
Theatre drapes	Secure drapes with a carefully positioned towel clip. Avoid use of sticky tape.
Airway management	After securing the airway, the priority is the avoidance of trauma & further bullae formation – care must be taken when applying face masks, head tilting and lifting chin. Wrap foam padding around tape ties before securing ET tube to protect the skin on the face & neck. Cover the areas of face where mask &/or anaesthetist's fingers will rest with a protective layer of suitable non-adherent dressing such as Mepitel One®, Geliperm® or ActiformCool®. Cricoid pressure is not contraindicated but pressure should be applied evenly and with no sideways movement[4].

Detailed advice & guidance on choice of anaesthesia & airway management (intubation) is available in Guys & St Thomas' NHS Trust Anaesthetic Guidelines[1]. Please contact the EB nursing team for more information if required.

Epidural Management

Skin preparation as above.
Avoid use of “sticky drapes”.
Use of adhesive dressings to safely secure the epidural is unavoidable unless suturing (using a tunnelling method) is an option. Use of medical adhesive removal spray is essential when removing the epidural in order to avoid skin damage.
Protect the skin on the spine from potential damage caused by pressure from cannula by applying Mepilex Transfer® to the back underneath the line.
Wherever possible allow the patient/carer to remove dressings when the epidural is removed.

Intra-Operative Management and Monitoring

Oxygen saturation monitoring	Nail & hand deformity is common & therefore it may not be possible to apply the probe to a digit. It may be necessary to use the ear lobe. If the finger probe is used it is suggested that the finger is well lubricated & then protected with the tip of a glove before the probe is applied[2].
BP	Apply 2-3 layers of soft padding (e.g. soft-band) beneath the cuff.
ECG	Use non-adhesive electrode pads wherever possible. Adhesive electrodes can be used if the adhesive part is removed & the electrode secured in place with Mepitac®. Alternatively the electrode can be placed onto a defib pad sandwiched between two pieces of Mepitel®[2] or stuck directly onto Mepitel One® (Note that the readout can be erratic with these methods).
Temperature control & monitoring	Standard tympanic temperature monitoring advised. Avoid tempadots. To maintain patient body temperature during the procedure an adjustable warming system (e.g. Bair Hugger) may be used.
Trolley, bed & equipment	Ensure that all equipment coming into contact with the patient is well padded & lubricated where appropriate.
Incidental pressure	Avoid staff inadvertently leaning on or resting instruments on the patient.
Diathermy	Consider use of bipolar diathermy or harmonic scalpel as adhesive pads should be avoided wherever possible. If unavoidable then the pad should be removed with extreme caution & generous use of silicone medical adhesive remover spray or 50/50.

Occasional & non-routine intra-operative procedures

Urinary catheterisation	Use a small gauge silicone catheter (10ch or smaller) & ensure that it is well lubricated. Position catheter tubing with care to avoid potential skin damage.
Naso-gastric tube insertion	Avoid use of rigid NG tube. Lubricate small gauge tube well before insertion & position with care.
Use of stirrups for positioning during procedure	If required the legs should be well padded for protection first.

Post Operative Management & Analgesia

Extubation	Awake extubation should be considered to minimise potential airway obstruction & the need for mask pressure on the unprotected face. Oropharangeal suctioning can lead to life threatening bullae formation[4]. Post Operative oxygen should be administered via a face mask padded with Mepilex Transfer®. Alternatively protect the face with a dressing such as Geliperm®.
Pharangeal suction	Direct vision suction only. Avoid yanker suckers where possible.
Nutritional requirements	Special diets may be required & the advice of a dietitian with knowledge of EB should be sought (EB dietitian can be contacted via EB office). Constipation may be a chronic problem. Many people with EB will have a gastrostomy.
Beds/ mattresses	Continuous pressure relieving system e.g. Repose® should be used. The KCI Visio® mattress should be used if the patient is at high risk. Wherever possible the patient should have an electric bed to enable self positioning & reduce the risk of skin damage as result of manual handling.
Analgesia	Consider use of regional anaesthesia as an adjunct to general anaesthesia[1]. Pain management as per WHO analgesic ladder is recommended. PR analgesia should be used with extreme caution (risk of damage to fragile anal margins). Use of morphine is NOT contraindicated in EB[1].

Theatre Essentials

- SpO2 ear probe
- ECG electrodes placed on defib gel pads
- Mepitel One®, Geliperm® and ActiformCool® to protect face from masks
- Silicone medical adhesive remover e.g. Apeel® or Niltac® spray to remove tapes & dressings safely
- Soft band
- Mepilex Transfer® to protect back if Epidural used
- Mepitel®, Mepilex® or Episil® to secure venflon
- Mepitac® to secure ETT or LMA. Alternatively use foam padding around tape ties
- Cling Film to protect skin temporarily if dressings are removed
- Selection of Classic LMAs size 2- 2.5
- Nasal Mask (Goldman)
- Selection of laryngoscopes
- Fibre optic laryngoscope

To be avoided…

Anything sticky!

But don't panic! If something has been inadvertently applied then remove using silicone medical adhesive remover spray. If this is not available or appropriate please leave in situ and ask the patient to remove it later. Much damage occurs when people panic and try to remove something immediately – unless it is essential that the item is removed it is far better to leave it to the patient or their carer.

References

1. Guys & St Thomas' NHS Trust (2010) Guidelines for Anaesthetic Management of Epidermolysis Bullosa Patients
2. Herod et al (2002) Epidermolysis Bullosa in children: pathophysiology, anaesthesia and pain management. Paediatric Anaesthesia 12: 388-397
3. Sweeney K (2009) Protocol for the pre-operative, intra-operative and post-operative care of a patient with Recessive Dystrophic Epidermolysis Bullosa. St James's Hospital, Ireland.
4. Ames W, Mayou B & Williams K (1999) Anaesthetic management in epidermolysis bullosa. British Journal of Anaesthesia 82 (5): 746-51
5. WHO (2009, January 26). National Patient Safety Agency. Retrieved October 12, 2010, from www.npsa.nhs.uk/advise.
6. Goldschneider K, Lucky A, Mellerio J et al (2008). Perioperative care of patients with Epidermolysis Bullosa: proceedings of the 5th international symposium on Epidermolysis Bullosa, Santiago Chile, December 4–6, 2008. Pediatric Anesthesia 2010 20: 797–804

Product	Company
Flowtron Boots	Huntley Heatlhcare Limited
Apeel	Clinimed Limited
Niltac	Trio Healthcare International Limited
HoverMatt	Hovertech International
KCI RIK	KCI Medical Limited
KCI Visio	KCI Medical Limited
Episil	Advancis Medical
Mepitac	Molnlycke Healthcare
Mepital One	Molnlycke Healthcare
Mepilex Transfer & Mepilex Lite	Molnlycke Healthcare
K band	Urgo Ltd
Geliperm	Geistlich Sons Limited
ActiFormCool	Activa Healthcare Limited
Bair Hugger	Arizant UK Limited
Repose	Frontier Theraputics Limited

Further support and advice

Further details of products listed in Guidelines can be obtained from the adult nursing team contacts listed on the back page.

Contact details

All Nursing & Social Care Services can be contacted Monday to Friday 9am-5pm.

DEBRA Adult Nursing Service – Linked to St Thomas' Hospital	
Secretary to the EB Adult Nurse team	01527 456968 (8.00am – 2pm Mon – Fri)
Hospital – EB Secretary Out of hours on call dermatologist	0207 188 6399 0207 188 7188
EB Nurse Consultant (Adults)	07775 688324 (9.00am – 5pm Mon – Thur)

DEBRA Children's Nursing Service – Linked to Great Ormond Street Hospital	
EB team	0207 829 7808
Emergency on call service	0207 405 9200 (ask for EB Nurse on call)

Children's Nursing Service – Birmingham Children's Hospital	
EB team	0121 333 8224

Adult Nursing Service – Solihull Hospital	
EB team	07846 986987 including out of hours

Scottish Nursing Service	
Nursing team	01698 477777

DEBRA Social Care Managers	
South England	01344 771961
Midlands	01299 826999
North England	07920 231271
Scotland	01698 477777
General enquiries	01344 771961
DEBRA Office – Director of Nursing & Social Care	01344 771961

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