EVALUASI PENGGUNAAN ANTIBIOTIK PADA PASIEN DIARE AKUT ANAK DI PUSKESMAS KEBUMEN I

SKRIPSI

Disusun Untuk Memenuhi Sebagian Persyaratan
Mencapai Derajat Sarjana Farmasi

Diajukan Oleh :
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PROGRAM STUDI FARMASI PROGRAM SARJANA
SEKOLAH TINGGI ILMU KESEHATAN MUHAMMADIYAH GOMBONG
2020

HALAMAN PERSETUJUAN

EVALUASI PENGGUNAAN ANTIBIOTIK PADA PASIEN DIARE AKUT ANAK DI PUSKESMAS KEBUMEN I

Telah disetujui dan dinyatakan Telah Memenuhi Syarat untuk diujikan

Pada Tanggal 5 Juni 2020

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Beserta perangkat yang diperlukan (bila ada). Dengan demikian saya memberikan kepada Perpustakaan Stikes Muhammadiyah Gombong untuk menyimpan, mengalihkan dalam bentuk media lain, mengelolanya dalam bentuk pangkalan data, mendistribusikan secara terbatas, dan mempublikasikannya di internet atau media lain untuk kepentingan akademis tanpa perlu meminta ijin pada saya maupun memberikan royalti kepada saya selama tetap mencantumkan nama saya sebagai penulis.

Demikian pernyataan ini saya buat dengan sebenar-benarnya.

Gombong, 5 Juni 2020
Yang menyatakan,

Qori Deswara

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ABSTRAK

EVALUASI PENGGUNAAN ANTIBIOTIK PADA PASIEN DIARE AKUT ANAK DI PUSKESMAS KEBUMEN I

Latar Belakang, diare merupakan buang air besar dengan feses berbentuk lebih cair dari biasanya, kandungan air dalam tinja lebih banyak dari biasanya yaitu >200 gram atau 200ml/24 jam. Diare ditandai dengan buang air besar encer lebih dari 3 kali per hari.
Tujuan Penelitian, penelitian ini bertujuan untuk mengetahui pola penggunaan antibiotik dan mengevaluasi kerasionalan antibiotik pada pasien diare akut anak di Puskesmas Kebumen I.
Metode Penelitian, penelitian ini merupakan penelitian observasional non-eksperimental dengan mengumpulkan data secara retrospektif yang akan dianalisis secara deskriptif. Evaluasi kerasionalan penggunaan antibiotik akan dibandingkan dengan Pedoman Pengobatan Puskesmas yaitu Manajemen Terpadu Balita Sakit tahun 2008 dan *Pharmacoteraphy Handbook* tahun 2008 serta jurnal *Antibiotics for the Empirical Treatment of Acute Diarrhea in Children* tahun 2006. Sampel dalam penelitian ini yaitu data medis anak dengan diagnosis diare akut yang berumur 0-17 tahun dan mendapat terapi antibiotik.
Hasil Penelitian, antibiotik yang paling banyak digunakan yaitu cotrimoxazole (76,7%), metronidazole (18,6%), dan cefixime (4,7%). Evaluasi kerasionalan berdasakan tepat indikasi (95,3%), tepat dosis (74,4%), tepat pasien (95,3%), dan tepat obat (95,3%) menunjukan bahwa penggunaan antibiotik pada pasien diare akut anak rasional.

Kata kunci : *Diare akut, Pediatrik, Antibiotik.*

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ABSTRACT

THE EVALUATION OF THE USE OF ANTIBIOTICS IN CHILDREN ACUTE DIARRHEA PATIENS IN THE COMMUNITY HEALTH CENTER KEBUMEN I

Background, diarrhea is defecation with more liquid stools than usual, the amount of water in the stool is more than usual, which is >200 grams or 200ml/24 hours. Diarrhea is characterized by watery bowel movement more than 3 times a day.
Purpose, this study aims to determine the pattern of antibiotic use, and evaluate the rationality of antibiotics in children with acute diarrhea in *Puskesmas Kebumen I*.
Method, this research is a non-experimental observational study by collecting data retrospectively which will be analyzed descriptively. An evaluation of the rationality of antibiotics use compared with Guideline Treatment Manajemen *Terpadu Balita Sakit 2008* and *Pharmacoteraphy Handbook* 2008 and journals *Antibiotics for the Empirical Treatment of Acute Diarrhea in Children*. The sample in this study is the medical data of children with a diagnosis of acute diarrhea aged 0-17 years and receiving antibiotics therapy.
Result, the result of this study, the most widely used antibiotics are cotrimoxazole (76,7%), metronidazole (18,6%), dan cefixime (4,7%). Rationality evaluation based on the right indicatin (95,3%), right dose (74,4%), right patient (95,3%), and right drug (95,3%) shows that the use of antibiotics in acute diarrhea patient is rational.

Keywords: *Acute diarrhea, Pediatric, Antibiotic*

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PABA : P- Aminobenzoat Acid

WGO : World Gastroenterology Organisation

BAB I. PENDAHULUAN

1.1 Latar Belakang Masalah

Diare merupakan buang air besar (BAB) dengan feses berbentuk lebih cair dari biasanya, kandungan air dalam tinja lebih banyak yaitu sekitar >200 gram atau 200 ml/24 jam. Diare ditandai dengan buang air besar encer lebih dari 3 kali dalam sehari[(1)]. Penyakit diare di bagi dalam dua jenis, yaitu diare akut dan diare kronik. Diare yang berlangsung kurang dari 2 minggu dan onset gejalanya tiba-tiba disebut sebagai diare akut. Gejala yang dirasakan penderita diare akut yaitu tinja cair, badan lemas, berlangsung beberapa jam atau bahkan beberapa hari. Sedangkan pasien yang mengalami diare selama 2 minggu lebih merupakan diare kronik[(2)].

Selain gejala umum penyakit diare seperti tinja yang cair dan meningkatnya frekuensi BAB, penderita dapat mengalami gejala penyerta, yaitu nyeri pada bagian abdomen, muntah, terasa mual, mulas, demam, dan tanda-tanda dehidrasi[(3)]. Penyebab diare karena infeksi di bagi menjadi empat, yaitu virus (*Rotavirus serotype* 1, 2, 8, dan 9 pada manusia, *Norwalk virus*, *Astrovirus*, *Adenovirus* (tipe 40, 41), *Small bowel structured virus*, *Cytomegalovirus*), bakteri (*E. coli*, *Shigella spp.*, *Campylobacter jejuni (Helicobacter jejuni)*, protozoa (*Entamoeba histolytica, Gardia lamblia, Microsporidium spp, Cryptosporidium, Cyclospora cayanensis, isospora belli*), dan helmints (*Schistosoma spp, Strongyloides stercoralis, Trichuris trichuria, Capilaria philippinensis*)[(2)].

Diare akut masih menjadi suatu masalah kesehatan di Indonesia. Menurut Riskesdas (2013) penyakit diare masuk dalam urutan ketiga sebagai penyakit menular berdasarkan cara penularan. Kejadian Luar Biasa (KLB) penyakit diare yang disertai dengan kejadian kematian masih sering terjadi[(5)]. Berdasarkan hasil beberapa lembaga survey kesehatan nasional tentang angka kematian bayi dan balita karena diare, yaitu salah

pada balita sebesar 13%. Studi Mortalitas di dapat hasil survey angka kematian pada bayi mencapai 9,1% dan angka kematian balita mencapai 15,3%. Menurut Riskesdas (Riset Kesehatan Dasar) angka kematian pada bayi 42% dan angka kematian pada balita sebesar 25,2%[6]. Kecamatan Kebumen memiliki kasus diare tahun 2016 pada masing-masing puskemas yaitu Puskesmas Kebumen 1 terdapat 804 kasus, Puskesmas Kebumen II terdapat 804 kasus, dan Puskesmas Kebumen III terdapat 627 kasus[7]. Tahun 2017 Kabupaten Kebumen memiliki kasus diare pada laki-laki terdapat 14.286 kasus dan pada perempuan terdapat 9.238 kasus.

Tatalaksana yang cepat dan tepat perlu dilakukan untuk menurunkan angka kematian yang disebabkan karena diare[8]. Penatalaksanaan yang dapat dilakukan pada diare akut yaitu penggantian cairan dan elektrolit, serta obat anti diare untuk diare akut non infeksi, sedangkan untuk diare akut infeksi ditambahkan dengan pemberian antibiotik[9]. Obat antibiotik yang digunakan pada diare akut infeksi harus rasional[10]. Antibiotik adalah suatu senyawa kimia yang diperoleh dari suatu mikroorganisme dan dapat pula diperoleh dengan cara sintetik yang menghambat dan membunuh perkembangan bakteri[11].

Peresepan antibiotik khususnya pada usia anak-anak harus diberikan perhatian yang utama untuk menghindari pemakaian yang tidak rasional. Banyaknya fakta yang menunjukan bahwa di negara berkembang 40% pasien anak-anak yang terdiagnosa diare akut memperoleh antibiotik yang seharusnya tidak diberikan[12]. Kesalahan pengonsumsian antibiotik[13] dan peresepan antibiotik yang cukup tinggi serta kurang bijak akan meningkatkan angka kejadian resistensi terhadap antibiotik [14].

Penderita diare akut masih banyak diresepkan antibiotik oleh dokter di Puskesmas. Menurut penelitian Hasanah (2018) tentang “Gambaran Penggunaan Antibiotik pada Penderita Diare Akut Anak Rawat Jalan di UPTD Puskesmas Lhok Bengkuang Kecamatan Tapaktuan” dapat disimpulkan bahwa karakteristik pada pasien dengan diagnosa diare akut berdasarkan kriteria jenis kelamin pada anak laki-laki yaitu sebanyak

56,6%, berdasarkan kriteria usia paling banyak terjadi pada anak usia 2 tahun yaitu sebanyak 23,0%, dan berdasarkan kriteria waktu kejadian menurut bulan dalam tahun paling banyak terjadi pada bulan April yaitu sebanyak 11,2%. Penggunaan antibiotik yang paling banyak digunakan adalah Cotrimoxazole yaitu sebanyak 96,7%.

Rendahnya tingkat kesadaran serta tingkat pengetahuan masyarakat tentang penggunaan obat yang rasional perlu diberikan perhatian khusus agar tidak terjadi resistensi obat. Kebumen memiliki jumlah penduduk di bawah usia 15 tahun tercatat 311.020 jiwa[15]. Kecamatan Kebumen memiliki 3 puskesmas, dimana berdasarkan data yang telah dipaparkan jumlah kasus diare di Puskesmas Kebumen I terdapat 804 kasus. Berdasarkan penjelasan di atas diare akut merupakan penyakit yang perlu mendapatkan perhatian, khususnya dalam penggunaan antibiotik yang diberikan oleh dokter. Oleh karena itu, peneliti ingin melakukan penelitian terkait penggunaan antibiotik yang diberikan kepada pasien diare akut anak di Puskesmas Kebumen I.

1.2 Rumusan Masalah

1. Bagaimana pola penggunaan obat antibiotik pada pasien diare akut anak di Puskesmas Kebumen I?
2. Apakah penggunaan obat antibiotik pada pasien diare akut anak di Puskesmas Kebumen I sudah sesuai dengan literatur yang digunakan?

1.3 Tujuan Penelitian

1. Untuk mengetahui pola penggunaan antibiotik pada pasien diare akut anak Puskesmas Kebumen I.
2. Untuk mengetahui kesesuaian penggunaan obat antibiotik pada pasien diare akut anak Puskesmas Kebumen I.

1.4 Manfaat Penelitian

1. Hasil penelitian ini diharapkan dapat memberi gambaran pada tenaga kerja farmasi dan dokter mengenai penggunaan antibiotik pada pasien diare akut anak.

2. Hasil penelitian diharapkan bisa menjadi masukan atau bahan pertimbangan pada dokter dalam meningkatkan kerasionalan penggunaan antibiotik pada pasien yang didiagnosa diare akut anak.

1.5 Keaslian Penelitian

Berikut adalah tabel yang menyajikan daftar penelitian-penelitian terdahulu mengenai evaluasi penggunaan antibiotik pada pasien diare akut anak.

Table 1. Keaslian Penelitian

No	Nama	Tahun	Judul	Hasil	Pembeda
1.	Agitsah, Siska, dan Al	2013	Penggunaan Antibiotik pada Terapi Diare Akut Anak di Instalasi Rawat Jalan Puskesmas Bendan Tahun 2009 - 2012	Penggunaan antibiotik pada terapi diare akut anak tahun 2012 sebesar 83,59%, dengan rincian kotrimoksazol (92,63%), kloramfenikol (2,76%), metronidazol (1,84%), tetrasiklin (0,69%), gentamisin (0,69%), amoksisilin (0,46%), sefadroksil (0,23%), neomisin (0,23%), eritromisin (0,23%), dan ketokonazol (0,23%). Dengan demikian terapi diare akut anak di Instalasi Rawat Jalan Puskesmas	Tempat : Puskesmas Kebumen I Referensi sebagai pembanding pedoman Puskesmas dan Dipiro 2008

				Bendan Kota Pekalongan sudah tepat dan memenuhi persyaratan Standar Pengobatan Dasar di Puskesmas.	
2.	Trisnowati, Irawati, dan Setiawan	2017	Kajian Penggunaan Antibiotik pada Pasien Diare Akut di Bangsal Rawat Inap Anak	Sebagian besar (93,02%) pasien anak dengan diare akut dalam penelitian ini mendapatkan antibiotik selama menjalani perawatan di rumah sakit. Golongan antibiotik yang paling sering digunakan adalah sefalosporin generasi 3 (69,23%) dengan seftriakson sebagai jenis antibiotik yang paling sering digunakan.	Tempat : Puskesmas Kebumen I Membanding-kan dengan Dipiro 2008
3.	Hasanah	2018	Gambaran Penggunaan Antibiotik pada Penderita Diare Akut Anak Rawat	Karakteristik pasien dengan diagnosa diare akut berdasarkan kriteria jenis kelamin paling banyak terjadi pada anak laki-laki yaitu sebanyak 56,6%,	Tempat : puskesmas Kebumen I. Data berupa antibiotik yang digunakan untuk diare

	Jalan di UPTD Puskesmas Lhok Bengkuang Kecamatan Tapaktuan	berdasarkan kriteria usia paling banyak terjadi pada usia 2 tahun yaitu sebanyak 23,0%, dan berdasarkan kriteria waktu kejadian menurut bulan dalam tahun paling banyak terjadi pada bulan April yaitu sebanyak 11,2%,. Penggunaan antibiotik yang paling banyak digunakan adalah Cotrimoxazole yaitu sebanyak 96,7%.	akut anak (terbanyak). Kesesuaian kerasionalan (tepat dosis, tepat pasien, tepat obat, dan Tepat indikasi)

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LAMPIRAN

Lampiran 1. Jadwal Penelitian

Tahap penelitian	Uraian kegiatan	Bulan tahun 2019 dan 2020					
		Okt	Nov	Des	Jan	Feb	Mar
Persiapan	Pengajuan Judul						
	Penyusunan Proposal						
	Pengajuan Proposal						
	Perizinan Penelitian						
Pelaksanaan	Pengambilan Data						
	Pengolahan Data						
Penyelesaian	Analisis Data						
	Penyusunan Hasil Akhir						

Lampiran 2. Tabel Pengumpulan Data

Nama	No. RM	Jenis kelamin	Umur	Penyakit Penyerta non-infesksi	Jenis patogen	Jenis antibiotik	Gol. Antibiotik	Dosis	Bentuk Sediaan

Lampiran 3. Surat Permohonan Etical Clearence

	SEKOLAH TINGI ILMU KESEHATAN MUHAMMADIYAH GOMBONG	Nomor	FRM-LPM-002
		Revisi ke	00
		Tanggal Berlaku	1 Maret 2017

SURAT PERMOHONAN ETICAL CLEARENCE

Kepada Yth:
Ketua Tim Etik
Stikes Muhammadiyah Gombong

Dengan Hormat,
Sehubungan dengan akan dilaksanakannya penelitian dengan ini saya mengajukan permohonan untuk mendapatkan *Ethical Clearance* dari Tim Etik Stikes muhammadiyah Gombong atas nama :

Nama = Qori Deswara
NIM = C11600044
Program Studi = S1 Farmasi
Judul Penelitian = **Evaluasi Penggunaan Antibiotik Pada Pasien Diare Akut Anak Di Puskesmas Kebumen I**

Rancangan Penelitian = Oktober 2019-Mei 2020
Subyek Penelitian = Rekam Medis Pasien

Waktu penelitian = Februari 2020-Maret 2020
Pembimbing Skripsi = 1. Condrosuro Miyarso, M.Pharm., Apt
2. Drs. Muh. Husnul Khuluq, M.Pharm., Apt

Bersama ini kami lampirkan proposal penelitian.
Demikian surat permohonan ini kami ajukan, atas perhatian dan bantuannya kami ucapkan terimakasih.

Gombong, 5 Januari 2020
Hormat saya

(Qori Deswara)

Lampiran 4. Surat Keterangan Lolos Etik

	SEKOLAH TINGGI ILMU KESEHATAN MUHAMMADIYAH GOMBONG	Nomor	FRM-LPM-006
		Revisi ke	00
		Tanggal Berlaku	1 Maret 2017

SURAT KETERANGAN LOLOS UJI ETIK

NO: 525.6/IV.3.AU/F/ETIK/I/2020

Tim Etik Penelitian STIKES Muhammadiyah Gombong dalam upaya melindungi hak azasi dan kesejahteraan subyek penelitian, telah mengkaji dengan teliti proposal berjudul :

EVALUASI PENGGUNAAN ANTIBIOTIK PADA PASIEN DIARE AKUT ANAK DI PUSKESMAS KEBUMEN 1

Nama peneliti utama	:	Qori Deswara
NIM	:	C11600044
Nama institusi	:	STIKES Muhammadiyah Gombong
Program Studi	:	Farmasi Program Sarjana

Dan telah menyetujui proposal tersebut.

Gombong, 28 Januari 2020

Ketua Tim Etik Penelitian,

Dyah Puji Astuti, S.SiT., MPH

Lampiran 5. Surat Izin Penelitian Kepada Kesbangpol

LEMBAGA PENELITIAN DAN PENGABDIAN MASYARAKAT
SEKOLAH TINGGI ILMU KESEHATAN MUHAMMADIYAH GOMBONG
Jl. Yos Sudarso No. 461, Telp./Fax. (0287) 472433, 473750, Gombong, 54412
Website : www.stikesmuhgombong.com E-mail : stikesmuhgombong@yahoo.com

Nomor : 098.1/IV.3.LPPM/A/II/2020 Gombong, 4 Februari 2020
Lamp : -
Hal : Permohonan Ijin

Kepada Yth :
Kepala Kesbangpol
Kab. Kebumen
Di tempat

Assalamu'alaikum Wr. Wb.

Teriring do'a semoga kita dalam melaksanakan tugas sehari-hari senantiasa mendapat lindungan dari Allah SWT. Amin.

Sehubungan dengan akan dilaksanakannya penelitian bagi mahasiswa Prodi Farmasi Program Sarjana STIKES Muhammadiyah Gombong, dengan ini kami mohon kesediaannya untuk memberikan ijin kepada mahasiswa kami :

Nama	:	Qori Deswara
NIM	:	C11600044
Judul Penelitian	:	Evaluasi Penggunaan Antibiotik pada Pasien Diare Akut Anak di Puskesmas Kebumen 1
Keperluan	:	Ijin Penelitian

Demikian atas perhatian dan ijin yang diberikan kami ucapkan terima kasih.

Wassalamu'alaikum Wr.Wb.

An. Ketua
Lembaga Penelitian dan
Pengabdian Masyarakat
Sekretaris

Kaprik Dwi Asti, M.Kep.
NIK : 06048

*Menjadi lembaga pendidikan kesehatan yang **Unggul, Modern dan Islami***

Lampiran 6. Surat Izin Penelitian Kepada BAPEDA

PEMERINTAH KABUPATEN KEBUMEN
KANTOR KESATUAN BANGSA DAN POLITIK
Jalan Arungbinang No.15 Kebumen Telepon / Fax (0287) 384088
Email : kesbangpolkebumen@gmail.com Website : www.kesbangpol.kebumenkab.go.id
Facebook : kesbangpolkebumem Twitter : @kesbangpol_kbm

REKOMENDASI

NOMOR : 072/038/2020

IJIN PENELITIAN

Menunjuk Surat dari STIKES MUHAMMADIYAH GOMBONG Nomor : 098.1/IV.3.LPPM/A/II/2020 tanggal 4 Februari 2020 Perihal Rekomendasi ijin penelitian, dengan ini memberikan REKOMENDASI atas kegiatan penelitian/survey/riset di Kabupaten Kebumen yang akan dilaksanakan oleh :

Nama	:	QORI DESWARA
Pekerjaan	:	Mahasiswi
NIM/NIP/NIK/NIDN	:	C11600044
Alamat	:	Kel. Tamanwinangun, RT 004/008 Kec.Kebumen, Kab. Kebumen
Jumlah Anggota	:	-
Penanggungjawab	:	Arnika Dwi Asti, M.Kep.
Lokasi	:	Puskesmas Kebumen 1
Waktu	:	7 Februari 2020 s/d 7 Mei 2020
Judul/Tema Penelitian	:	EVALUASI PENGGUNAAN ANTIBIOTIK PADA PASIEN DIARE AKUT ANAK DI PUSKESMAS KEBUMEN 1

Dengan ketentuan sebagai berikut :

1. Sebelum melaksanakan penelitian/survey/riset wajib terlebih dahulu melaporkan kepada pejabat pemerintah untuk mendapatkan petunjuk, dengan sebelumnya memberikan copy/salinan/tembusan surat ijin penelitian/survey/riset yang diterbitkan oleh BAP3DA Kab.Kebumen.
2. Pelaksanaan penelitian/survey/riset tidak disalahgunakan untuk tujuan tertentu yang dapat mengganggu stabilitas pemerintahan. Untuk penelitian yang dapat dukungan dana dari sponsor baik dalam negeri maupun luar negeri, agar dijelaskan pada saat mengajukan perijinan. Tidak membahas masalah politik dan atau agama yang dapat menimbulkan terganggunya stabilitas keamanan dan ketertiban.
3. Wajib menjaga tata tertib dan mentaati ketentuan-ketentuan yang berlaku.
4. Surat Keterangan Penelitian ini dapat dicabut dan dinyatakan tidak berlaku apabila pemegang Surat Keterangan Penelitian tidak mentaati/mengindahkan peraturan yang berlaku.

Demikian untuk digunakan sebagaimana mestinya.

Kebumen, 7 Februari 2020
a.n. BUPATI KEBUMEN
KEPALA KANTOR KESATUAN BANGSA DAN POLITIK
KABUPATEN KEBUMEN
Up. Kepala Seksi Ketahanan Bangsa

BUDI HARJONO, S.E.
Penata Tk. I
NIP. 19650808 198703 1 008

Lampiran 7. Surat Izin Penelitian Kepada Puskesmas Kebumen I

PEMERINTAH KABUPATEN KEBUMEN
BADAN PERENCANAAN DAN PENELITIAN DAN PENGEMBANGAN DAERAH
(B A P P E D A)
Jl. Veteran No. 2 Telp/Fax. (0287) 381570, Kebumen - 54311

Nomor : 071 - 1 / 15 / 2020
Lampiran : -
Hal : **Izin Penelitian**

Kebumen, 7 Februari 2020

Kepada:
Yth. Kepala UPTD Puskesmas Kebumen 1
di
Tempat

Menindaklanjuti surat rekomendasi Bupati Kebumen nomor 072 / 38 / 2020 tanggal 7 Februari 2020 tentang Izin Penelitian/ Survey, maka dengan ini diberitahukan bahwa pada Instansi/ wilayah Saudara akan dilaksanakan penelitian oleh :

1. Nama / NIM : QORI DESWARA/ C11600044
2. Pekerjaan : Mahasiswi STIKES Muhammadiyah Gombong
3. Alamat : Kel. Tamanwinangun, RT 004/008, Kec. Kebumen, Kab. Kebumen
4. Penanggung Jawab : Arnika Dwi Asti, M.Kep.
5. Judul Penelitian : EVALUASI PENGGUNAAN ANTIBIOTIK PADA PASIEN DIARE AKUT ANAK DI PUSKESMAS KEBUMEN 1
6. Waktu : 7 Februari 2020 s/d 07 Mei 2020

Dengan ketentuan-ketentuan sebagai berikut :

a. Pelaksanaan survey/ penelitian tidak disalahgunakan untuk tujuan tertentu yang dapat mengganggu kestabilan Pemerintah.
b. Setelah survey/ penelitian selesai diharuskan melaporkan hasil-hasilnya kepada BAP3DA Kabupaten Kebumen.

Demikian surat izin ini dibuat untuk dapat digunakan sebagaimana mestinya.

A.n. KEPALA BAP3DA KABUPATEN KEBUMEN
KABID PERENCANAAN, PENELITIAN DAN PENGEMBANGAN

INDRI YULIANTO, S.E., M.Ec.Dev
Penata Tingkat 1-III/d
NIP. 19820709 200604 1 009

Tembusan : disampaikan kepada Yth.
1. Kepala Dinkes Kab. Kebumen;
2. Yang Bersangkutan;
3. Arsip

Lampiran 8. Output Distribusi Karakteristik Pasien Berdasarkan Jenis Kelamin

JenisKelamin

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Laki-laki	20	46.5	46.5	46.5
	Perempuan	23	53.5	53.5	100.0
	Total	43	100.0	100.0	

Lampiran 9. Output Distribusi Karakteristik Pasien Berdasarkan Umur

Umur

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 - <2 tahun	20	46.5	46.5	46.5
	2 - <5 tahun	11	25.6	25.6	72.1
	5 - <10 tahun	5	11.6	11.6	83.7
	10 - 17 tahun	7	16.3	16.3	100.0
	Total	43	100.0	100.0	

Lampiran 10. Output Distribusi Karakteristik Pasien Berdasarkan Berat Badan

BeratBadan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4 - <6 kg	1	2.3	2.3	2.3
	6 - <10 kg	15	34.9	34.9	37.2
	10 - <16 kg	14	32.6	32.6	69.8
	16 - <19 kg	7	16.3	16.3	86.0
	19 - <30 kg	3	7.0	7.0	93.0
	30 - <40 kg	3	7.0	7.0	100.0
	Total	43	100.0	100.0	

Lampiran 11. Output Distribusi Jenis Antibiotik

JenisAntibiotik

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cotrimoxazole	33	76.7	76.7	76.7
	Metronidazole	8	18.6	18.6	95.3
	Cefixime	2	4.7	4.7	100.0
	Total	43	100.0	100.0	

Lampiran 12. Output Distribusi Bentuk Sediaan

BentukSediaan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	suspensi	33	76.7	76.7	76.7
	tablet	10	23.3	23.3	100.0
	Total	43	100.0	100.0	

Lampiran 13. Output Distribusi Tepat Indikasi Berdasarkan MTBS dan Referensi

TepatIndikasiPKM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ya	41	95.3	95.3	95.3
	Tidak	2	4.7	4.7	100.0
	Total	43	100.0	100.0	

TepatIndikasiRef

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ya	43	100.0	100.0	100.0

Lampiran 14. Output Distribusi Tepat Dosis Berdasarkan MTBS dan Referensi

TepatDosisPKM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ya	32	74.4	74.4	74.4
	Tidak	11	25.6	25.6	100.0
	Total	43	100.0	100.0	

TepatDosisRef

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ya	33	76.7	76.7	76.7
	Tidak	10	23.3	23.3	100.0
	Total	43	100.0	100.0	

Lampiran 15. Output Distribusi Tepat Pasien Berdasarkan MTBS dan Referensi

TepatPasienPKM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ya	41	95.3	95.3	95.3
	Tidak	2	4.7	4.7	100.0
	Total	43	100.0	100.0	

TepatPasienRef

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ya	43	100.0	100.0	100.0

Lampiran 16. Output Distribusi Tepat Obat Berdasarkan MTBS dan Referensi

TepatObatPKM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ya	41	95.3	95.3	95.3
	Tidak	2	4.7	4.7	100.0
	Total	43	100.0	100.0	

TepatObatRef

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ya	43	100.0	100.0	100.0

Lampiran 17. Data mentah Pengambilan Sampel

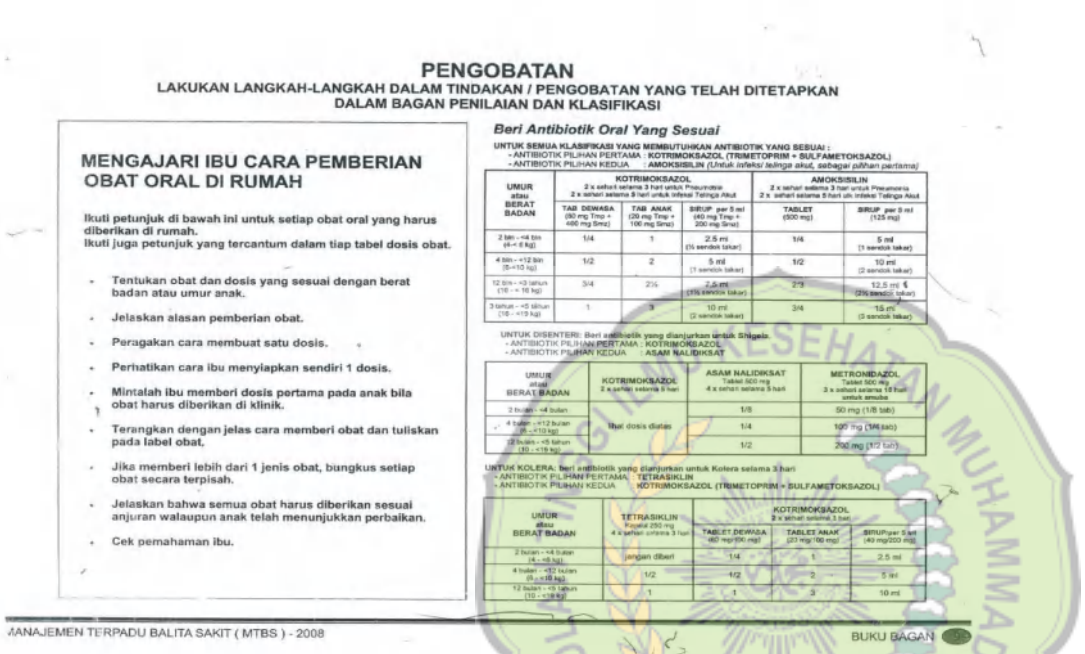
Nama	Bulan Pem	L/P	Umur	BB	Diagnosis	Antibiotik	Dosis Resep	Perhitungan
Px 1	Januari	P	1 th 4 bln	8	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	80/400 mg
Px 2	Januari	L	1 th 6 bln	9	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	90/450 mg
Px 3	Januari	P	2 th	13	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1.5 cth	130/650 mg
Px 4	Januari	P	4 th 6 bln	14	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	140/700 mg
Px 5	Januari	P	3 bln	5	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 0.5 cth	50/250 mg
Px 6	Januari	P	1 th 6 bln	9	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	90/450 mg
Px 7	Januari	P	9 bln	6.5	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	65/325 mg
Px 8	Januari	L	1 th 8 bln	11	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	110/550 mg
Px 9	Februari	L	1 th 2 bln	9	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	90/450 mg
Px 10	Februari	L	2 th 5 bln	10	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	100/500 mg
Px 11	Maret	P	1 th 9 bln	9	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	90/450 mg
Px 12	Maret	P	2 th	14	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1.5 cth	140/700 mg
Px 13	Maret	P	3 th 8 bln	17	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	170/850 mg
Px 14	Maret	L	8 bln	7	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	70/350 mg
Px 15	Maret	L	10 bln	7.5	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	75/375 mg
Px 16	April	P	11 bln	9	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	90/450 mg
Px 17	April	L	3 th	14	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	140/700 mg
Px 18	Mei	L	2 th 7 bln	15	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1.5 cth	150/750 mg
Px 19	Mei	L	10 bln	8	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	80/400 mg
Px 20	Mei	L	1 th 10 bln	13	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	130/650 mg
Px 21	Mei	P	1 th 4 bln	12	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	120/600 mg

Px 22	Juni	P	13 th	26	Diare Akut	Metronidazole	3 x sehari 1 tab	195 mg
Px 23	Juni	P	7 th	18	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 2 cth	180/900 mg
Px 24	Juni	P	3 th 6 bln	12	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	120/600 mg
Px 25	Juni	L	2 th 7 bln	12	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1.5 cth	120/600 mg
Px 26	Juni	L	1 th 9 bln	10	Diare Akut	Metronidazole	3 x sehari ½ tab	75 mg
Px 27	Juni	L	2 th 9 bln	16	Diare Akut	Metronidazole	3 x sehari ½ tab	120 mg
Px 28	Juli	L	17 th	39	Diare Akut	Metronidazole	3 x sehari 1 tab	292,5 mg
Px 29	Juli	P	14 th	32	Diare Akut	Metronidazole	3 x sehari 1 tab	240 mg
Px 30	Juli	L	5 th	18	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 2 cth	180/900 mg
Px 31	Juli	L	1 th 2 bln	9	Diare Akut	Cefixime (sefalosporin Gen ketiga)	2 x sehari ½ cth	67,5 mg
Px 32	Juli	P	12 th	16	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 2 cth	160/800 mg
Px 33	Juli	P	7 th	18	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 2 cth	180/900 mg
Px 34	Agustus	L	3 th	13	Diare Akut	Metronidazole	3 x sehari 1 tab	97,5 mg
Px 35	Agustus	P	5 th	16	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1.5 cth	160/800 mg
Px 36	Agustus	P	5 th	14	Diare Akut	Cefixime (sefalosporin Gen ketiga)	2 x sehari ½ cth	105 mg
Px 37	Agustus	P	16 th	30	Diare Akut	Metronidazole	3 x sehari 1 tab	225 mg
Px 38	Agustus	P	15 th	18	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 tab	180/900 mg
Px 39	September	P	17 th	28.5	Diare Akut	Metronidazole	3 x sehari 1 tab	213,75 mg
Px 40	September	L	1 th 2 bln	9	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	90/450 mg
Px 41	November	L	10 bln	7	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	70/350 mg
Px 42	November	P	1 th	7	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari ½ tab	70/350 mg
Px 43	November	L	1 th 1 bln	8	Diare Akut	Cotrimoxazole (Sulfonamida)	2 x sehari 1 cth	80/400 mg

Nama	Bentuk sediaan	MTBS				Dipiro dan jurnal			
		Tepat indikasi	Tepat dosis	Tepat pasien	Tepat obat	Tepat indikasi	Tepat dosis	Tepat pasien	Tepat obat
Px 1	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 2	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 3	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 4	Suspensi	Ya	Tidak	Ya	Ya	Ya	Tidak	Ya	Ya
Px 5	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 6	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 7	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 8	Suspensi	Ya	Tidak	Ya	Ya	Ya	Tidak	Ya	Ya
Px 9	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 10	Suspensi	Ya	Tidak	Ya	Ya	Ya	Tidak	Ya	Ya
Px 11	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 12	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 13	Suspensi	Ya	Tidak	Ya	Ya	Ya	Tidak	Ya	Ya
Px 14	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 15	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 16	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 17	Suspensi	Ya	Tidak	Ya	Ya	Ya	Tidak	Ya	Ya
Px 18	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 19	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 20	Suspensi	Ya	Tidak	Ya	Ya	Ya	Tidak	Ya	Ya

Px 21	Suspensi	Ya	Tidak	Ya	Ya	Ya	Tidak	Ya	Ya
Px 22	Tablet	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 23	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 24	Suspensi	Ya	Tidak	Ya	Ya	Ya	Tidak	Ya	Ya
Px 25	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 26	Tablet	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 27	Tablet	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 28	Tablet	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 29	Tablet	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 30	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 31	Suspensi	Tidak	Tidak	Tidak	Tidak	Ya	Tidak	Ya	Ya
Px 32	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 33	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 34	Tablet	Ya	Tidak	Ya	Ya	Ya	Tidak	Ya	Ya
Px 35	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 36	Suspensi	Tidak	Tidak	Tidak	Tidak	Ya	Ya	Ya	Ya
Px 37	Tablet	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 38	Tablet	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 39	Tablet	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 40	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 41	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 42	Tablet	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya
Px 43	Suspensi	Ya	Ya	Ya	Ya	Ya	Ya	Ya	Ya

Lampiran 18. Pedoman Pengobatan Puskesmas



PENGOBATAN

LAKUKAN LANGKAH-LANGKAH DALAM TINDAKAN / PENGOBATAN YANG TELAH DITETAPKAN DALAM BAGAN PENILAIAN DAN KLASIFIKASI

MENGAJARI IBU CARA PEMBERIAN OBAT ORAL DI RUMAH

Ikuti petunjuk di bawah ini untuk setiap obat oral yang harus diberikan di rumah.
Ikuti juga petunjuk yang tercantum dalam tiap tabel dosis obat.

- Tentukan obat dan dosis yang sesuai dengan berat badan atau umur anak.
- Jelaskan alasan pemberian obat.
- Peragakan cara membuat satu dosis.
- Perhatikan cara ibu menyiapkan sendiri 1 dosis.
- Mintalah ibu memberi dosis pertama pada anak bila obat harus diberikan di klinik.
- Terangkan dengan jelas cara memberi obat dan tuliskan pada label obat.
- Jika memberi lebih dari 1 jenis obat, bungkus setiap obat secara terpisah.
- Jelaskan bahwa semua obat harus diberikan sesuai anjuran walaupun anak telah menunjukkan perbaikan.
- Cek pemahaman ibu.

Beri Antibiotik Oral Yang Sesuai

UNTUK SEMUA KLASIFIKASI YANG MEMBUTUHKAN ANTIBIOTIK YANG SESUAI :
- ANTIBIOTIK PILIHAN PERTAMA : **KOTRIMOKSAZOL (TRIMETOPRIM + SULFAMETOKSAZOL)**
- ANTIBIOTIK PILIHAN KEDUA : **AMOKSISILIN** *(Untuk infeksi telinga akut, sebagai pilihan pertama)*

UMUR atau BERAT BADAN	KOTRIMOKSAZOL 2 x sehari selama 3 hari untuk Pneumonia 2 x sehari selama 5 hari untuk infeksi Telinga Akut			AMOKSISILIN 2 x sehari selama 3 hari untuk Pneumonia 2 x sehari selama 5 hari utk infeksi Telinga Akut	
	TAB DEWASA (80 mg Trim + 400 mg Smz)	TAB ANAK (20 mg Trim + 100 mg Smz)	SIRUP per 5 ml (40 mg Trim + 200 mg Smz)	TABLET (500 mg)	SIRUP per 5 ml (125 mg)
2 bln - <4 bln (4 - < 6 kg)	1/4	1	2,5 ml (½ sendok takar)	1/4	5 ml (1 sendok takar)
4 bln - <12 bln (6 - <10 kg)	1/2	2	5 ml (1 sendok takar)	1/2	10 ml (2 sendok takar)
12 bln - <3 tahun (10 - < 16 kg)	3/4	2½	7,5 ml (1½ sendok takar)	2/3	12,5 ml (2½ sendok takar)
3 tahun - <5 tahun (16 - <19 kg)	1	3	10 ml (2 sendok takar)	3/4	15 ml (3 sendok takar)

UNTUK DISENTERI: Beri antibiotik yang dianjurkan untuk Shigela.
- ANTIBIOTIK PILIHAN PERTAMA : **KOTRIMOKSAZOL**
- ANTIBIOTIK PILIHAN KEDUA : **ASAM NALIDIKSAT**

UMUR atau BERAT BADAN	KOTRIMOKSAZOL 2 x sehari selama 5 hari	ASAM NALIDIKSAT Tablet 500 mg 4 x sehari selama 5 hari	METRONIDAZOL Tablet 500 mg 3 x sehari selama 10 hari untuk amuba
2 bulan - <4 bulan	Ikuti dosis diatas	1/8	50 mg (1/8 tab)
4 bulan - <12 bulan (6 - <10 kg)		1/4	100 mg (¼ tab)
12 bulan - <5 tahun (10 - <19 kg)		1/2	200 mg (½ tab)

UNTUK KOLERA: beri antibiotik yang dianjurkan untuk Kolera selama 3 hari
- ANTIBIOTIK PILIHAN PERTAMA : **TETRASIKLIN**
- ANTIBIOTIK PILIHAN KEDUA : **KOTRIMOKSAZOL (TRIMETOPRIM + SULFAMETOKSAZOL)**

UMUR atau BERAT BADAN	TETRASIKLIN Kapsul 250 mg 4 x sehari selama 3 hari	KOTRIMOKSAZOL 2 x sehari selama 3 hari		
		TABLET DEWASA (80 mg/400 mg)	TABLET ANAK (20 mg / 100 mg)	SIRUPper 5 ml (40 mg/200 mg)
2 bulan - <4 bulan (4 - <6 kg)	jangan diberi	1/4	1	2,5 ml
4 bulan - <12 bulan (6 - <10 kg)	1/2	1/2	2	5 ml
12 bulan - <5 tahun (10 - <19 kg)	1	1	3	10 ml

Lampiran 19 . Jurnal Antibiotics For The Empirical Treatment of Acute Infectious Diarrhea in Children

Antibiotics for the Empirical Treatment of Acute Infectious Diarrhea in Children

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While the routine use of antibiotics for infectious diarrhea in children must be avoided, because it brings little benefit in most cases and is associated with the risk of increasing antimicrobial resistance, selected cases may require antimicrobial therapy, and the choice of the antimicrobial agent often has to be made empirically. Physicians prescribing antimicrobials in such a setting have not only to be aware of the most likely pathogens, but also of their characteristic antimicrobial susceptibility pattern and the safety profile of the various drugs. We reviewed the literature on the use of ampicillin, beta-lactamase inhibitors, trimethoprim-sulfamethoxazole, chloramphenicol, tetracyclines, nalidixic acid, fluoroquinolones, third-generation cephalosporins, macrolides, metronidazole and malabsorbed agents in the setting of acute infectious diarrhea, and we evaluated the available information, seeking to apply it to empirical use, highlighting clinically-useful pharmacological information and patients' and pathogens' characteristics that must be taken into account for decisions about antimicrobial therapy.

Key Words: Diarrhea, antibiotics, children, treatment.

Acute diarrhea remains one of the most important health issues worldwide, with high morbidity and mortality rates, accounting for more than two million deaths annually [1,2]. Acute diarrhea is the commonest infectious disease in developing countries, mostly affecting children younger than five years old. Whereas most cases of acute diarrhea are caused by virus, such as rotavirus and enteric adenovirus, and tend to present in a mild and self-limiting fashion, with the optimal treatment consisting solely of oral rehydration and nutritional support, practitioners in ambulatories or emergency rooms, especially in developing countries, are frequently faced with life-threatening presentations, characterized by signs of severe dehydration, toxemia, marked leucocytosis with high percentages of immature forms, high-grade fever, severe welfare depression, tenesmus, gross fecal blood loss and dissemination of infection. Supportive anti-dehydration therapy, associated with adequate nutritional support, is the cornerstone of therapy, regardless of the etiology and the severity of the process, and its prompt and early adoption is associated with a favorable outcome. Moreover, dehydration can simulate toxemia and mislead the clinical assessment of severity. As a consequence, volumetric expansion, electrolyte corrections and nutritional support should always be performed before any other therapeutic measure.

A few cases, however, may require antimicrobial therapy, because of the severity of the clinical picture or a patient's increased potential to develop complications, such as dissemination of the disease, sepsis or disseminated intravascular coagulation. Among those patients more prone to an unfavorable evolution are those receiving chemotherapy, HIV-positive, cirrhotics, diabetics, neonates, very young infants, the elderly, patients who have undergone organ transplantation or who have a lymphoproliferative disease, patients with sickle cell disease, or those with articular or cardiac valve prostheses. Additionally, the use of antibiotics is mandatory in severe cases of cholera, shigellosis and typhoid fever. Antimicrobial treatment tends to quicken the clinical resolution of diarrhea, prevent the progression of disease and reduce the severity of associated symptoms, such as fever, abdominal pain and vomiting. Furthermore, antimicrobial therapy decreases secondary cases, by halting person-to-person spread of most pathogens, which warrants special consideration for the use of antibiotics in the treatment of child-care workers, health professionals and workers in the catering industry or services. Prompt adoption of empirical antimicrobial therapy is also useful in the setting of febrile acute bloody diarrhea in young children and is currently recommended by the World Health Organization [3].

On the other hand, there are several arguments against the empirical use of antibiotics for acute infectious diarrhea. The most compelling of them is the fact that acute infectious diarrhea is typically a self-limiting disease, regardless of its etiology, with most cases resolving in less than three days [4]. Moreover, one must consider the low incidence of treatable pathogens among the causative agents of acute diarrhea (which are viruses in most cases), the possible occurrence of side effects, the potential development of resistant strains, the cost of treatment, and a possible noxious effects on the disease itself, as seen with enterohemorrhagic *E. coli* (EHEC) and non-typhoidal *Salmonella*. Additionally, virtually all oral antimicrobials are able to cause, or worsen, diarrhea because

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of their effect on gut microflora. Oral antimicrobials may also have their efficacy reduced by impaired intestinal absorption and enhanced intestinal motility.

The most severe drawback of widespread use of antimicrobials for the treatment of infectious diarrhea is the consequently rising rates of antimicrobial resistance, fostered by the unselected use of these drugs in patients with a mild presentation, with low risk for complications or who would recover well without antibiotics. This finding demonstrates the important role of doctors when they prescribe these drugs, especially to outpatients. Every case should be evaluated individually, considering the patient's age, nutritional status, risk for complications, characteristics of diarrhea with possible etiological agents, and the risks and benefits intrinsic to antimicrobial therapy. Laboratory information is particularly useful to help distinguish invasive enteropathogens (which may require antimicrobial therapy) from non-invasive agents, such as viruses (rotavirus, adenovirus, calicivirus, and astrovirus) and parasites (*Giardia lamblia*, *Entamoeba histolytica* and *Criptosporium* sp.).

Given the self-limiting nature of the disease, most patients with acute diarrhea do not require laboratorial evaluation and can be safely managed as outpatients. Severely ill patients may need hospitalization and further investigation, including complete blood counts, electrolyte dosing and stool culture. Rotavirus-associated diarrhea should always be excluded in such cases, given its propensity to cause severe and dehydrating pictures [5,6]. Blood culture may also be indicated in a few cases, depending on the severity and risk of hematogenic dissemination. Because of the low yield and extreme dependence on laboratory methods, the results of stool cultures should be carefully interpreted along with clinical findings. A negative culture by no means excludes the possibility of bacterial etiology in a patient with clinical signs of bacterial diarrhea. Additionally, a mixed infection may occur as well.

While stool cultures and antimicrobial testing of the isolates are the best way to select the most adequate antimicrobial regimen, the results are only available after 72 hours or more. In some instances, it is possible to wait for the result; often cases improve substantially during this interval and the use of antibiotics is no longer required when the results become available, even if enteropathogenic bacteria are identified. In severe cases, however, it is advisable to start antimicrobials empirically as soon as stools are collected for culture.

Since the use of antibiotics is associated with higher response rates if it is adopted early in the course of the disease, one is often not able to wait for the results of the stool culture before initiating antimicrobial therapy. Therefore, the decision to start antimicrobial therapy for acute diarrhea must be made solely on clinical grounds, and the choice of the antimicrobial agent has to be made empirically; it should consist of the narrowest antimicrobial spectrum possible that covers the most likely pathogens in each case. As soon as the results of the stool culture become available, the therapy may be altered according to the antimicrobial susceptibility pattern, favoring the use of narrower-spectrum, cheaper and/or safer drugs, if antimicrobial therapy remains necessary.

In order to decrease costs, as well as to reduce the possibility of increasing antimicrobial resistance among circulating strains, clinicians should choose the narrowest antibiotic regimen that adequately covers the predicted organisms for each case. Therefore, up-to-date knowledge of locally circulating strains and their antimicrobial susceptibility patterns is crucial. Clinicians must be wary of adopting antimicrobial susceptibility patterns reported by published studies from other countries, no matter how extensive and well designed they are, because the frequency of pathogens and their susceptibility patterns are highly variable from one part of the world to another. Certain clinical features may suggest specific etiological agents or help narrow the list of possible agents implicated, such as intense tenesmus with uncountable dejections, suggesting *Shigella*, right lower quadrant pain, suggesting *Yersinia*, or painless voluminous watery diarrhea without abdominal pain or fever, suggesting *Vibrio cholerae*. Severe bloody diarrhea in afebrile patients strongly suggests an EHEC-associated picture, especially if there is clustering of cases or a report of consumption of undercooked meat; the use of antibiotics should be avoided in such cases, because it increases toxin production and increases the risk of hemolytic-uremic syndrome [7,8]. In the case of patients who report the use of antibiotics during the weeks preceding an episode of diarrhea, one should examine the possibility of pseudomembranous colitis, caused by *Clostridium difficile*.

Despite the intrinsic limitations of stool cultures, laboratory investigation may also be helpful in judging the need for antibiotics for diarrheal patients. The detection of blood in the stools is a reliable indicator of invasive diarrhea, favoring the use of antibiotics if it is associated with other clinical or laboratorial hallmarks of invasive diarrhea. A simple enzyme-linked immunoabsorbent assay (ELISA) may identify rotavirus-associated cases of diarrhea and preclude the use of antibiotics. Also, the development of effective polymerase chain reaction-based techniques for stool analysis is expected to allow reliable early etiological diagnosis, guiding antimicrobial therapy, even in the absence of antimicrobial susceptibility testing, thus favoring the rational use of drugs. However, most clinical laboratories remain unable to identify enteropathogens, as the most sensitive methods remain restricted to a few research laboratories. Additionally, clinical laboratories are also unable to identify viral diarrheal pathogens other than rotavirus, and they normally cannot perform bacterial serotyping.

Ampicillin and Trimethoprim-Sulfamethoxazole

Ampicillin and trimethoprim-sulfamethoxazole (TMP-SMX) once were the drugs of choice for the empirical treatment of

outpatients with acute infectious diarrhea, because of their efficacy, safety and affordability. With the passing of years, outbreaks of infectious diarrhea caused by *Shigella* or *Salmonella* strains resistant to one or both of them have been reported from all continents [9-18]. Even though these drugs may still be useful against some bacteria infecting outpatients or inpatients in various parts of the world, and though they have the obvious advantages of oral administration, the resistance of many pathogens has reached such high rates that their widespread empirical use can no longer be recommended [19-24], except when supported by detailed local knowledge of the sensibility pattern of circulating strains.

The association of ampicillin with the beta-lactamase inhibitor sulbactam provides enhanced antimicrobial activity, but increasing antimicrobial resistance to that association has also been documented, chiefly among *Shigella* spp. [20-25]. Additionally, ampicillin may fail clinically despite confirmed *in vitro* microbial susceptibility, because of its poor intracellular penetration. Amoxicillin is rapidly absorbed from the gastrointestinal tract, and therefore it is less effective than ampicillin for the treatment of infectious diarrhea.

TMP-SMX remains the drug of choice for the treatment of prolonged *Aeromonas* infections in most regions, though a 48% resistance rate has been reported from Taiwan [26]. That association may also remain an adequate choice for treating *Yersinia* infections, as no evidence of increasing resistance has been shown so far. However, one placebo-controlled study of TMP-SMX for the treatment of *Yersinia* infections showed no reduction in the duration of illness [27], though it decreased the duration of fecal shedding of the pathogen [28]. TMP-SMX may also remain an effective choice for the treatment of enterotoxigenic and enteropathogenic *E. coli* (ETEC and EPEC, respectively), in spite of growing resistance in several areas, chiefly among ETEC, which is a very common causative agent of travelers' diarrhea, especially in Latin America [29]. It may also remain a good choice for the treatment of cholera in children less than eight years old.

Chloramphenicol

Rising resistance rates, uncomfortable posology, and the risk of side effects, have contributed to the displacement of chloramphenicol as a good drug for the empirical treatment of acute diarrhea. Nevertheless, it still may be used empirically if typhoid fever is strongly suspected on clinical grounds, as long as it is supported by up-to-date knowledge of antimicrobial susceptibility pattern of locally circulating strains. The use of chloramphenicol for the treatment of typhoid fever is associated with reduced mortality and decreased incidence of life-threatening complications, but the need for a long two - three week regimen to prevent relapse and prolonged fecal shedding of pathogens is a significant drawback. Widespread plasmid-mediated resistance to chloramphenicol among typhoid *Salmonella* species became a clinical problem in the early 1970s [30,31], and both ampicillin and TMP-SMX were shown to be effective drugs to replace it until the late 1980s, when plasmid-mediated resistance to chloramphenicol, ampicillin and TMP-SMX was reported [32-34]. On the other hand, the re-emergence of chloramphenicol-susceptible strains has been reported from areas where the use of chloramphenicol had been avoided due to high resistance rates, possibly as a result of decreased selective pressure [35,36]. The occurrence of aplastic anemia is a very rare complication associated with the use of chloramphenicol, but it should always be kept in mind due to its potentially life-threatening severity [37,38].

Tetracyclines

In spite of their low cost and broad antimicrobial spectrum, the use of tetracyclines in pediatric patients is limited by permanent dental discoloration in children younger than eight years of age. The total dosage received appears to be the most important factor influencing the degree of staining, which has also been shown to depend upon the dosage and duration of therapy. Additionally, tetracyclines have been shown to cause enamel hypoplasia and reversibly impair bone growth. Because of these important side effects, tetracyclines have been progressively displaced by safer, equally effective drugs, for the treatment of most conditions in which they are likely to be effective. However, the benefits of therapy with a tetracycline can exceed the risks if alternative drugs are less efficacious or are associated with more significant side effects.

This is the case for cholera, for which the current standard antimicrobial therapy in adults is a single dose of fluoroquinolone, the use of which in children remains restricted. Oral tetracycline for three days or a single dose of doxycycline are the drugs of choice for the treatment of moderate to severe cases of cholera in patients older than eight years. Younger children may also profit from that therapy, in spite of the risk of dental staining, which has to be weighed against the benefits, i.e. decreases in the duration of diarrhea and in fluid replacement requirements. Whenever possible, the preferred tetracycline is doxycycline, because the risk of dental staining is less with this drug than with the other tetracyclines; in addition, it is given only twice a day. In the treatment of tetracycline-resistant strains, TMP-SMX has been used for children less than eight years of age who have cholera; ampicillin and macrolides may be reasonable alternatives.

Nalidixic Acid

Nalidixic acid, the only non-fluorinated quinolone available, was initially considered the best option to replace ampicillin and TMP-SMX [39,40]; but its widespread use was followed by increasing resistance in several countries, chiefly among *Shigella* spp. and, to a lesser extent, *Salmonella* [19,22,41-47]. However, in some regions there are still low rates of resistance, so it may still be a good option, especially because

of its low cost and the possibility of oral use [23,48-51].

Besides increasing microbial resistance, two major problems for therapy with nalidixic acid are the regimen that should be used (four times a day for five days), which compromises compliance, and the fact that clinical and microbiological failure has been reported in 30% of patients infected with nalidixic acid-susceptible strains, possibly because of its poor cellular penetration when compared to fluorinated quinolones [39,52]. Nalidixic acid has been reported to damage juvenile weight-bearing joints in animal studies [53,54], but clinical studies have failed to demonstrate an association between the use of nalidixic acid and growth impairment or joint symptoms in humans, even with prolonged treatment [55,56].

Recently, resistance to nalidixic acid among *Shigella* and both typhoidal and non-typhoidal *Salmonella* has been shown to be a reliable predictive factor of clinically relevant decreased susceptibility to fluoroquinolones, which, on the other hand, cannot be considered fluoroquinolone resistance according to current guidelines [57-64].

Fluoroquinolones

The fluoroquinolones have become the drugs of choice for the empirical treatment of acute diarrhea in adults, because they are active against most of the common treatable enteropathogens, have excellent tissue and intracellular penetration, achieve high fecal concentrations, are suitable for oral administration, and have a favorable safety profile in adults [65,66]. The use of 500 mg ciprofloxacin twice a day for five days in the empirical therapy of acute diarrhea has been shown to decrease the duration of diarrhea, fecal shedding of pathogens, duration of fever and of other symptoms as well as total duration of illness, based on several randomized, placebo-controlled trials of various types of adult populations [67-71]. This decrease appears to be independent of the predominant pathogens that are isolated and of the rate of negative cultures from the study population, reflecting both the broad spectrum of activity of this drug and the low yield of stool cultures. Shorter three-day or even single-dose regimens of fluoroquinolones have been suggested to be effective for the treatment of shigellosis in adults and children [72-74]. Nevertheless, it is essential that clinicians be very selective in the cases in which they use fluoroquinolones, because the widespread unnecessary use of those drugs brings the risk of increasing microbial resistance to one of the few highly effective oral antimicrobial drugs currently available, as has been recently reported for some strains of *Shigella*, *Salmonella* and *Campylobacter* [75-80].

In children, though, there are several restrictions to the use of fluoroquinolones. Joint disorders observed in young experimental animals during experimental toxicity trials made pharmaceutical companies decide not to seek to extend fluoroquinolone indications to Pediatrics. Such side effects have also been noted in children participating on clinical trials [81-83] and, indeed, among all possible adverse effects of the use of fluoroquinolones, only musculoskeletal events are more common in children than in adults [84-87]. Based on the potential risks and benefits of prescribing fluoroquinolones to children, the American Academy of Pediatrics, as well as several experts, have suggested that fluoroquinolones only be prescribed for specific infections or as a second-line antibiotic, in the case of severe bacterial infections with proven resistance to safer drugs [88-92]. Therefore, it is not advisable to use fluoroquinolones for the empirical treatment of diarrhea in small children, though it may have a role in culture-oriented therapy. Further studies to precisely assess the cut-off age beyond which children may use fluoroquinolones safely are warranted.

Third Generation Cephalosporins

Since third generation cephalosporins have equally wide antimicrobial activity spectrum and fewer adverse effects than the fluoroquinolones, they have been considered by many the best drugs for the empirical treatment of severe acute infectious diarrhea in children, this is especially true for ceftriaxone, given the success rates similar to those achieved with the fluoroquinolones [83]. Ceftriaxone may be administered both intravenously and intramuscularly, typically for five days; but a two-day course has also been shown to be effective for shigellosis [93], but not for typhoid fever, which needs longer regimens [94]. Additionally, the clinical resolution of symptoms is typically slower with ceftriaxone than with ciprofloxacin, and more severe cases may require courses longer than five days. The effectiveness of ceftriaxone has been demonstrated in the treatment of both typhoid [95] and non-typhoid salmonellosis [96] and shigellosis [83,97], even with strains resistant to fluoroquinolones [98,99]. Besides the need for parenteral administration and the high cost, the major drawback of the widespread empirical use of ceftriaxone for the treatment of acute infectious diarrhea is the immediate danger of increasing microbial resistance to this useful drug. For all of these reasons, this drug should be reserved for very severe cases.

Cefixime is a third-generation cephalosporin that is administered orally; therefore, it may be an adequate drug for the treatment of outpatients. It is typically administered once or twice daily for five days, but it has been found that a two-day course is associated with rates of clinical cure similar to those achieved with a five-day course [100]. While a small trial found that therapy with cefixime failed in 47% of adults with shigellosis [101], others have reported high success rates with the use of cefixime for the treatment of childhood shigellosis and typhoid fever [95,102,103].

Azithromycin and Erythromycin

Oral azithromycin has been found to be a safe and effective alternative for the treatment of acute diarrhea due to a variety

of etiologic agents, and it may be an interesting empirical choice due to its safety, comfortable once-daily posology and high cellular penetration. A five-day course of azithromycin has achieved similar cure rates and lower relapse rates than a five-day course of ceftriaxone in the treatment of uncomplicated typhoid fever in children and adolescents [104,105], and similar success rates have been found in a seven-day course comparison with chloramphenicol for the treatment of infections caused by chloramphenicol-susceptible strains [106]. Azithromycin, however, has the advantage of lower overall resistance rates. Azithromycin has also been compared with fluoroquinolones, and the results have indicated similar clinical and bacteriological effectiveness in cure and relapse rates and in defervescence in the treatment of typhoid fever caused by both sensitive and multidrug-resistant organisms [107,108]. It has also been observed that azithromycin can be more suitable than ofloxacin for the treatment of infections caused by nalidixic acid-resistant strains [108]. A single oral dose of 1 g has been shown to be as effective as a single 500 mg dose of levofloxacin in adults with traveler's diarrhea, achieving similarly high success rates [109].

While most cases of *Campylobacter*-associated diarrhea are self-limiting and do not require the use of antibiotics, patients with high fever, with bloody diarrhea, prolonged disease, pregnancy or those who are HIV-positive should be treated. Azithromycin has also been shown to be effective against *Campylobacter*-associated diarrhea in a region where fluoroquinolone-resistance is endemic [110], while erythromycin stearate is still considered the drug of choice for the treatment of *Campylobacter* enteritis in children because of low overall resistance rates and lower cost. Erythromycin is also a good option for the treatment of severe cases of cholera in young children who should not take tetracyclines or fluoroquinolones. Additionally, resistance rates of *Vibrio cholerae* strains to tetracyclines, TMP-SMZ and ampicillin are high in several areas [111,112]. Azithromycin has been shown to be more effective for the treatment of shigellosis, than nalidixic acid [113] and cefixime [103] in children, and roughly as effective as ciprofloxacin in adults [114].

Metronidazole

Oral metronidazole is the first choice for the treatment of *Clostridium difficile* colitis, which is responsible for over 80% of antibiotic-associated cases of diarrhea, especially the most severe [115]. Such cases, however, account for only a small part of all cases of nosocomial diarrhea, which should not be empirically treated with metronidazole [116]. Several studies have found that the usual doses of metronidazole or vancomycin are equally efficacious against *C. difficile*-associated diarrhea, whereas some experts advocate the use of vancomycin for more severe cases [117,118]. As intravenous vancomycin is not satisfactorily efficacious against *C. difficile*, cases complicated by paralytic ileum or intestinal obstruction can be successfully treated with intravenous metronidazole, plus a vancomycin enema; but surgical evaluation is usually warranted. Therefore, the use of vancomycin may be avoided in order to prevent the selection of vancomycin-resistant strains, especially among enterococci.

Withdrawing the inciting antibiotic (generally a beta-lactam or a second or third generation cephalosporin) is a very important measure for the treatment of *C. difficile* colitis. Discontinuation of therapy is often enough to resolve mild presentations and must be accomplished as soon as possible in severe cases. Antimicrobial therapy is reserved for cases with increased severity or that persist after withdrawal of the inciting agent. Relapse is common a few weeks after clinical remission and frequently represents reinfection rather than therapeutic failure, so that the same antibiotic regimen can be used again. In spite of the efficacy of vancomycin, its use must be discouraged because of the ominous possibility of provoking the appearance of vancomycin-resistant strains.

Malabsorbed Agents

Because of concerns about growing resistance and side effects, great expectations have been raised for the use of antimicrobial agents that are not absorbed from the gastrointestinal tract and, therefore, tend to be associated with fairly low resistance rates and few adverse effects. Bicozamycin and oral aztreonam, albeit proven effective both *in vitro* and *in vivo*, have not become popular choices for the treatment of acute infectious diarrhea for a number of reasons [119-122].

The development of a broad-spectrum agent with such a favorable safety profile and a low tendency for increasing resistance would have a very positive impact, not only on the empirical treatment of severe diarrhea, but also on the therapy and prevention of travelers' diarrhea. Currently, rifaximin has been the focus of intense investigation, with exciting results. The effectiveness of rifaximin for the treatment of traveler's diarrhea has already been demonstrated in comparison with a placebo [123], with TMP-SMX [124] and with ciprofloxacin [125]. More data are needed to properly evaluate the efficacy of rifaximin for the treatment of severe invasive diarrhea.

Probiotics

Probiotics have been defined as living microorganisms that exert beneficial effects beyond their nutritional value upon ingestion in certain quantities [126]. Acid-lactic and non-pathogenic bacteria have been extensively used as probiotics, as has the non-pathogenic yeast *Saccharomyces boulardii*. Probiotic agents may be beneficial for the treatment of diarrhea through several mechanisms. These mechanisms vary from one agent to another; they include competition with enteropathogens for nutrition and adhesion, modification of bacterial toxins and/or their receptors and modulation of the

Table 1. Antimicrobial agents used most frequently for the treatment of acute infectious diarrhea

Drug	Posology	Remarks
Ampicillin	50-100 mg/Kg/day in four doses if weight under 20 Kg; for children above 20 Kg 250-500 mg four times a day if weight above 20 Kg	Empirical use not recommended unless supported by up-to-date knowledge of local susceptibility patterns. Combinations with beta-lactamase inhibitors may be especially useful for treating outpatients.
TMP-SMX	10/50 mg/Kg/day in 2 doses	Empirical use not recommended unless supported by up-to-date knowledge of local susceptibility patterns.
Chloramphenicol	50-100 mg/Kg/day in 4 doses	Currently, has its use limited to typhoid fever. Widespread resistance may render it not suitable for empirical use in many areas. Caution with aplastic anemia.
Tetracycline	20-50 mg/Kg/day in 4 doses	Do not use in children younger than 8 yrs-old. High resistance rates in several areas.
Doxycycline	2-4 mg/Kg/day in 1-2 doses*	Do not use in children younger than 8 yrs-old, unless as a last resort for severe cholera. Tetracycline preferred for young children.
Nalidixic acid	55 mg/Kg/day in 4 doses	Still useful in many areas of the world, despite high resistance rates in others. Affordability is a major advantage.
Ciprofloxacin	20-30 mg/Kg/day in 2 doses	No empirical use in children except in some individual cases strongly suspected of being caused by *Shigella sp.* or typhoid *Salmonella* resistant to safer agents. The commonest drug used in adolescents with bloody Traveler's diarrhea.
Ceftriaxone	50-100 mg/Kg/day in 1-2 doses	Safe and effective, but expensive. Reserve for use in cases of evident dissemination of disease. Avoid use in infants younger than 1 year.
Cefixime	7.5-10 mg/Kg/day in 1-2 doses	Safe and effective, but expensive. Reasonable choice for treating outpatients.
Azithromycin	5-12 mg/Kg/day in a single dose	Safe and effective, but expensive. Reasonable choice for treating outpatients.
Metronidazole	20-40 mg/Kg/day in 3 doses	Drug of choice for antibiotic-associated diarrhea.
Rifamixin	600 mg/day in 3 doses**	Promising drug for empirical therapy due to low tendency for side effects and raising antimicrobial resistance

* Adult dosing (100 mg twice a day) may be used if weight above 45 Kg. ** Adult dosing. No pediatric data.

host's immune response [127-131]. Several systematic reviews have addressed the role of probiotics in the treatment of acute diarrhea; generally it is agreed that probiotics reduce the duration of diarrhea when compared with a placebo, even though this may not be true for bacterial diarrhea [132-134]. There have been no reports of side effects so far. Further studies are warranted to determine exactly which probiotics are effective for each type of acute diarrhea. Additionally, several studies have investigated the role of probiotics for the prevention of community- and nosocomial-acquired diarrhea, antibiotic-associated diarrhea and travellers' diarrhea [135-138], but a discussion on those topics goes beyond the scope of this article.

Conclusion

There are plenty of antibiotics currently available for the treatment of acute infectious diarrhea in children (Table 1). While antibiotics are effective against most bacteria and may help shorten the duration of symptoms, it must always be kept in mind that antimicrobial therapy should be reserved for severe, prolonged or potentially complicated cases, as most patients respond fairly well to supportive therapy, and their indiscriminate use carries the danger of increasing antimicrobial resistance and brings no benefit to patients with mild presentations, as has been shown for uncomplicated salmonellosis [139]. Additionally, most diarrheal episodes affecting children are due to viruses, parasites, chemical agents and food intolerance, none of which requires antimicrobial therapy.

We reinforce the need for careful consideration of the use of antibiotics in the setting of acute diarrhea in children. The decision to start antimicrobial therapy should always be taken after adequate hydration and individual evaluation of various factors, including the likelihood of extra-intestinal dissemination of the infection and its severity. The empirical choice of the antimicrobial agent must be made individually

for each case, considering the safety and the cost of the drugs, the pathogens most likely to be infecting the patient and up-to-date knowledge of the susceptibility pattern of locally circulating strains. In that context, large multicentric studies, such as SENTRY and RESISTNET [140,141], certainly play a role, but they do not replace smaller studies that more faithfully depict the situation in a given city or service.

We emphasize that most cases of acute diarrhea involve a self-limiting condition, requiring no more than supportive treatment with adequate hydration and nutrition that can be accomplished at home. The physician should make the patient's parents aware of warning signs that depict aggravation of the picture and the need for returning to the hospital for re-evaluation. The parents should also be informed about the routes of transmission of enteropathogens and about preventive measures.

While antibiotics may play a major part in reducing mortality among severely-ill patients, the ultimate approach against diarrhea in developing countries rests on the need for improving sanitary conditions, maintaining exclusive breastfeeding until the sixth month of life and developing safe and effective vaccines for immune prophylaxis, along with systematic parental education.

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Lampiran 20. Logbook Bimbingan Skripsi

LOG BOOK

BUKU CATATAN HARIAN TEKNIS KEGIATAN PENELITIAN

PENELITIAN SKRIPSI

Nama Mahasiswa : QORI DESWARA

NIM C1160044

INSERT FOTO
FORMAL
BERWARNA
HASIL *SCAN*
3 x 4 cm

PROGRAM STUDI FARMASI PROGRAM SARJANA
SEKOLAH TINGGI ILMU KESEHATAN MUHAMMADIYAH
GOMBONG

RENCANA PENELITIAN PROGRAM STUDI FARMASI PROGRAM SARJANA STIKES MUHAMMADIYAH GOMBONG

KEGIATAN : ~~Eksperimen / Survei / Observasi / Wawancara/i / Seminar/~~ Konsul

PENELITIAN TAHAP : .....(Sesuai Proposal)

TEMA/JUDUL : Evaluasi penggunaan antibiotik pada pasien diare akut anak di Puskesmas kebumen !

TANGGAL : 12. Feb 2020 ....., WAKTU : 15.30.

TEMPAT : .....

HASIL KEGIATAN (Lampirkan foto-foto dokumentasi kegiatan serta penjelasannya)

CATATAN KHUSUS:

- ☐ Jika melibatkan orang lain (Sebutkan nama, PS & Universitas atau Lembaga));
- ☐ Kendala yang dihadapi; upaya mengatasi kendala
- ☐ dan lain-lain

Mengetahui

Pembimbing (.....)

Pembimbing (.....)

Mahasiswa YBS

(Rdn.....)

RENCANA PENELITIAN PROGRAM STUDI FARMASI PROGRAM SARJANA STIKES MUHAMMADIYAH GOMBONG

KEGIATAN : ~~Eksperimen~~ / ~~Survei~~ / Observasi / ~~Wawancara~~ / ~~Seminar~~/ Konsul

PENELITIAN TAHAP : .....(Sesuai Proposal)

TEMA/JUDUL : Evaluasi Penggunaan Antibiotik Pada Pasien diare Akut Anak di Puskesmar Kebumen 1

TANGGAL : 22 Feb. 2020, WAKTU : 08.51

TEMPAT :

HASIL KEGIATAN (Lampirkan foto-foto dokumentasi kegiatan serta penjelasannya)

CATATAN KHUSUS:

- ☐ Jika melibatkan orang lain (Sebutkan nama, PS & Universitas atau Lembaga));
- ☐ Kendala yang dihadapi; upaya mengatasi kendala
- ☐ dan lain-lain

Mengetahui

Pembimbing (.....)

Pembimbing (.....)

Mahasiswa YBS

(Rohi. D)

17

RENCANA PENELITIAN PROGRAM STUDI FARMASI PROGRAM SARJANA STIKES MUHAMMADIYAH GOMBONG

KEGIATAN : Eksperimen / Survei / Observasi / Wawancara/i / Seminar/ Konsul

PENELITIAN TAHAP : .....(Sesuai Proposal)

TEMA/JUDUL : Evaluasi penggunaan Antibiotik pada pasien diare akut anak di Puskesmas Kebumen I

TANGGAL : 9 April 2020, WAKTU : 09.34

TEMPAT : .....

HASIL KEGIATAN (Lampirkan foto-foto dokumentasi kegiatan serta penjelasannya)

CATATAN KHUSUS

- ☐ Jika meliba... ...aga));
- ☐ Kendala ya...
- ☐ dan lain-lain

Mengetahui

Pembimbing	Pembimbing	Mahasiswa YBS
(.....)	(.....)	(QORI .D)

19

RENCANA PENELITIAN PROGRAM STUDI FARMASI PROGRAM SARJANA STIKES MUHAMMADIYAH GOMBONG

KEGIATAN : Eksperimen / Survei / Observasi / Wawancara/i / Seminar/ Konsul

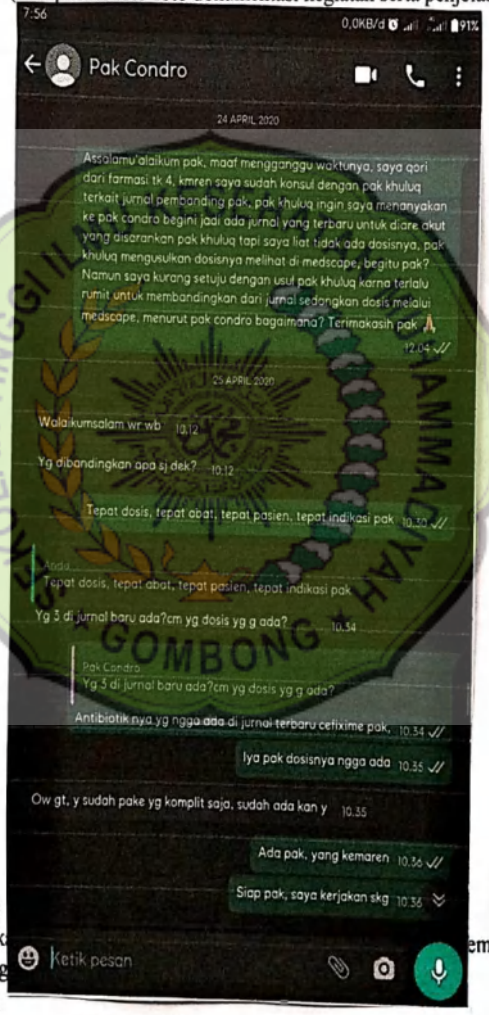
PENELITIAN TAHAP : .....(Sesuai Proposal)

TEMA/JUDUL : Evaluasi Penggunaan Antibiotik pada Pasien Diare Akut Anak di Puskesmas Kebumen I

TANGGAL : 24 April 2020, WAKTU : 12.09

TEMPAT : .....

HASIL KEGIATAN (Lampirkan foto-foto dokumentasi kegiatan serta penjelasannya)



CATATAN KHUSUS:

- ☐ Jika melibatk... embaga));
- ☐ Kendala yang...
- ☐ dan lain-lain

Mengetahui		Mahasiswa YBS
Pembimbing	Pembimbing	
(.....)	(.....)	(.....)

20

RENCANA PENELITIAN PROGRAM STUDI FARMASI PROGRAM SARJANA STIKES MUHAMMADIYAH GOMBONG

KEGIATAN : Eksperimen / Survei / Observasi / Wawancara/i / Seminar/ Kongu

PENELITIAN TAHAP : .....(Sesuai Proposal)

TEMA/JUDUL : Evaluasi Penggunaan Antibiotik pada pasien drare akut anak di Puskesmar Kebumen I

TANGGAL : 3 Mei ....., WAKTU : 10.26

TEMPAT : .....

HASIL KEGIATAN (Lampirkan foto-foto dokumentasi kegiatan serta penjelasannya)

CATATAN KHUSUS:

- ☐ Jika melibatkan ...aga));
- ☐ Kendala yang di...
- ☐ dan lain-lain

Mengetahui

Pembimbing	Pembimbing	Mahasiswa YBS
(.....)	(.....)	(.....)

21

RENCANA PENELITIAN PROGRAM STUDI FARMASI PROGRAM SARJANA STIKES MUHAMMADIYAH GOMBONG

KEGIATAN : Eksperimen / Survei / Observasi / Wawancara/i / Seminar/.....konsul.....

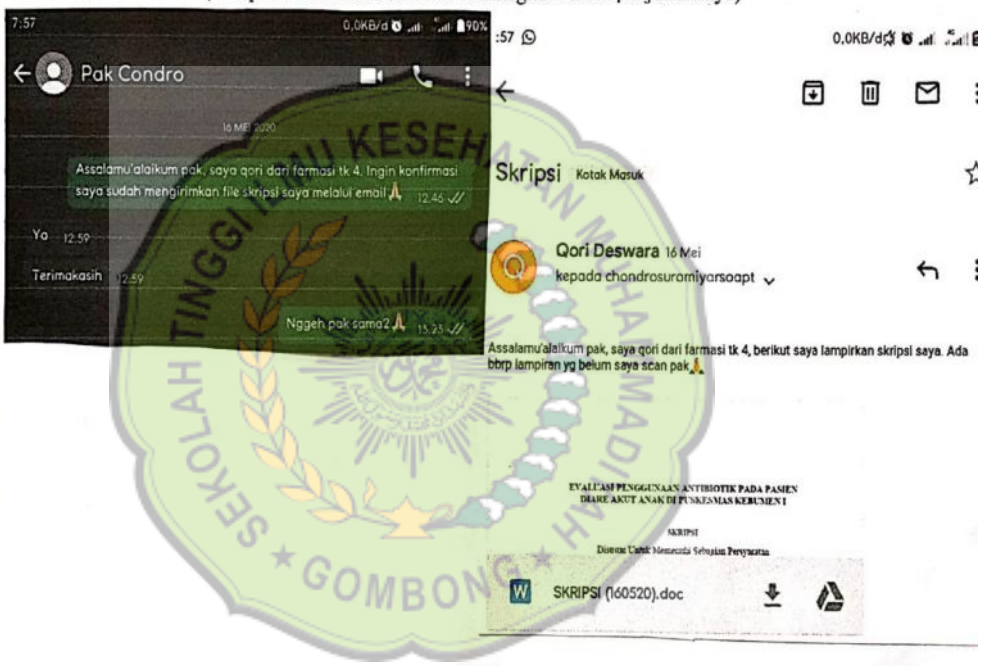
PENELITIAN TAHAP : .....(Sesuai Proposal)

TEMA/JUDUL : ~~Qori Deswara~~ Evaluasi Penggunaan Antibiotik Pada Pasien Diare Akut Anak di Puskesmas Kebumen I

TANGGAL : 16 Mei 2020, WAKTU : 12.46

TEMPAT : .....

HASIL KEGIATAN (Lampirkan foto-foto dokumentasi kegiatan serta penjelasannya)



CATATAN KHUSUS:

- ☐ Jika melibatkan orang lain (Sebutkan nama, PS & Universitas atau Lembaga));
- ☐ Kendala yang dihadapi; upaya mengatasi kendala
- ☐ dan lain-lain

Mengetahui

Pembimbing (.....)

Pembimbing (.....)

Mahasiswa YBS

Qori (.....)

22

RENCANA PENELITIAN PROGRAM STUDI FARMASI PROGRAM SARJANA STIKES MUHAMMADIYAH GOMBONG

KEGIATAN : Eksperimen / Survei / Observasi / Wawancara/i / Seminar/.....Konsul.....

PENELITIAN TAHAP : .....(Sesuai Proposal)

TEMA/JUDUL : Evaluasi Penggunaan Antibiotik Pada Pasien Diare Akut Anak di ~~Instalasi~~ Puskesmas Kebumen I

TANGGAL : 17 Mei 2020, WAKTU : 09.30

TEMPAT : .....

HASIL KEGIATAN (Lampirkan foto-foto dokumentasi kegiatan serta penjelasannya)

CATATAN KHUSUS:

- ☐ Jika melibatkan orang lain (Sebutkan nama, PS & Universitas atau Lembaga));
- ☐ Kendala yang dihadapi; upaya mengatasi kendala
- ☐ dan lain-lain

Mengetahui

Pembimbing	Pembimbing	Mahasiswa YBS
(.....)	(.....)	(.....Qori.....)

23

RENCANA PENELITIAN PROGRAM STUDI FARMASI PROGRAM SARJANA STIKES MUHAMMADIYAH GOMBONG

KEGIATAN : Eksperimen / Survei / Observasi / Wawancara/i / Seminar/...Konsul.....

PENELITIAN TAHAP : .....(Sesuai Proposal)

TEMA/JUDUL : Evaluasi Penggunaan Antibiotik Pada Pasien Diare Akut Anak di Puskesmas Kebumen I

TANGGAL : 19 Mei 2020, WAKTU : 13.36

TEMPAT : .....

HASIL KEGIATAN (Lampirkan foto-foto dokumentasi kegiatan serta penjelasannya)

CATATAN KHUSUS:

- ☐ Jika melibatkan orang lain (Sebutkan nama, PS & Universitas atau Lembaga));
- ☐ Kendala yang dihadapi; upaya mengatasi kendala
- ☐ dan lain-lain

Mengetahui

Pembimbing	Pembimbing	Mahasiswa YBS
(.....)	(.....)	(Qori)

24

RENCANA PENELITIAN PROGRAM STUDI FARMASI PROGRAM SARJANA STIKES MUHAMMADIYAH GOMBONG

KEGIATAN : Eksperimen / Survei / Observasi / Wawancara/i / Seminar/..... Konsul .....
PENELITIAN TAHAP : .....(Sesuai Proposal)
TEMA/JUDUL : Evaluasi Penggunaan Antibiotik pada Pasien Diare Akut Anak di Puskesmas Kebumen I
TANGGAL : 21 Mei 2020 ....., WAKTU : .....
TEMPAT : .....
HASIL KEGIATAN (Lampirkan foto-foto dokumentasi kegiatan serta penjelasannya)

CATATAN KHUSUS:

- ☐ Jika melibatkan orang lain (Sebutkan nama, PS & Universitas atau Lembaga));
- ☐ Kendala yang dihadapi; upaya mengatasi kendala
- ☐ dan lain-lain

Mengetahui

Pembimbing

Pembimbing

Mahasiswa YBS

(.....) (.....) (.....)

25

RENCANA PENELITIAN PROGRAM STUDI FARMASI PROGRAM SARJANA STIKES MUHAMMADIYAH GOMBONG

KEGIATAN : Eksperimen / Survei / Observasi / Wawancara/i / Seminar/ Fonsu

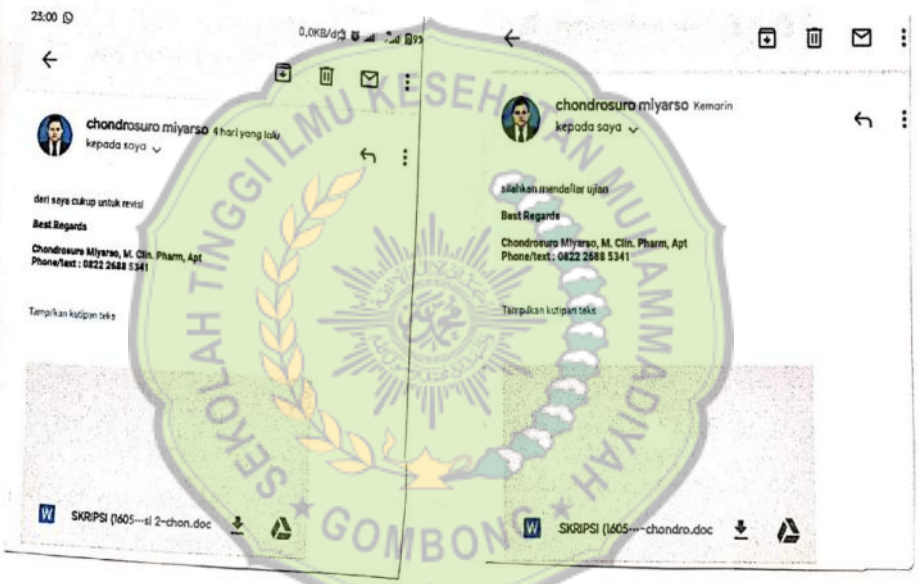
PENELITIAN TAHAP : .....(Sesuai Proposal)

TEMA/JUDUL : Evaluasi Penggunaan Antibiotik Pada Pasien Diare Akut di Puskesmas Kebumen I

TANGGAL : 29 Mei 2020, WAKTU : .....

TEMPAT : .....

HASIL KEGIATAN (Lampirkan foto-foto dokumentasi kegiatan serta penjelasannya)



ACC

CATATAN KHUSUS:

- ☐ Jika melibatkan orang lain (Sebutkan nama, PS & Universitas atau Lembaga));
- ☐ Kendala yang dihadapi; upaya mengatasi kendala
- ☐ dan lain-lain

Mengetahui

Pembimbing (.....)

Pembimbing (.....)

Mahasiswa YBS

(.....)

RENCANA PENELITIAN PROGRAM STUDI FARMASI PROGRAM SARJANA STIKES MUHAMMADIYAH GOMBONG

KEGIATAN : Eksperimen / Survei / Observasi / Wawancara/i / Seminar/... Konsul

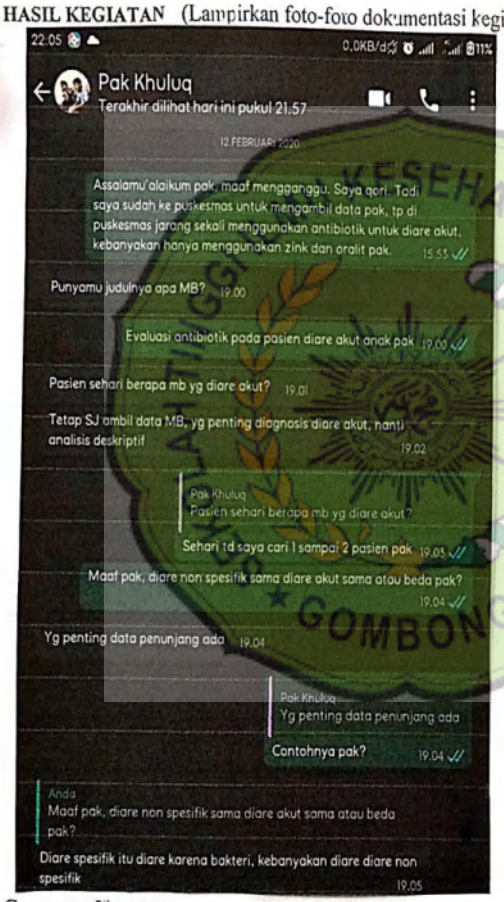
PENELITIAN TAHAP : .....(Sesuai Proposal)

TEMA/JUDUL : Evaluasi Penggunaan Antibiotik Pada Pasien Diare akut Anak di Puskesmas Kebumen I

TANGGAL : 12 Februari 2020, WAKTU : 15.23

TEMPAT : .....

HASIL KEGIATAN (Lampirkan foto-foto dokumentasi kegiatan serta penjelasannya)



CATATAN KHUSUS:

- ☐ Jika melibatkan orang lain (Sebutkan nama, PS & Universitas atau Lembaga));
- ☐ Kendala yang dihadapi; upaya mengatasi kendala
- ☐ dan lain-lain

Mengetahui

Pembimbing	Pembimbing	Mahasiswa YBS
(.....)	(.....)	(Qori)

RENCANA PENELITIAN PROGRAM STUDI FARMASI PROGRAM SARJANA STIKES MUHAMMADIYAH GOMBONG

KEGIATAN : Eksperimen / Survei / Observasi / Wawancara/i / Seminar/....Konsul.....
PENELITIAN TAHAP : .....(Sesuai Proposal)
TEMA/JUDUL : ...Evaluasi Penggunaan Antibiotik pada pasien diare Akut Anak di Puskesmas Kebumen I
.....
.....
TANGGAL : ...10 April 2020..., WAKTU : ...10.19...
TEMPAT : .....
HASIL KEGIATAN (Lampirkan foto-foto dokumentasi kegiatan, serta penjelasannya)

CATATAN KHUSUS:
- ☐ Jika melibatkan orang lain (Sebutkan nama, PS & Universitas atau Lembaga));
- ☐ Kendala yang dihadapi; upaya mengatasi kendala
- ☐ dan lain-lain

Mengetahui

Pembimbing	Pembimbing	Mahasiswa YBS
(.....)	(.....)	(.....)

RENCANA PENELITIAN PROGRAM STUDI FARMASI PROGRAM SARJANA STIKES MUHAMMADIYAH GOMBONG

KEGIATAN : Eksperimen / Survei / Observasi / Wawancara/i / Seminar/... Konsul

PENELITIAN TAHAP : ..... (Sesuai Proposal)

TEMA/JUDUL : Evaluasi Penggunaan Antibiotik Pada Pasien Diare Akut Anak di Puskesmas Sebumen I

TANGGAL : 16 April 2020, WAKTU : 08.41

TEMPAT : .....

HASIL KEGIATAN (Lampirkan foto-foto dokumentasi kegiatan serta penjelasannya)

CATATAN KHUS
- ☐ Jika meli... ...mbaga));
- ☐ Kendala yang dihadapi; upaya mengatasi kendala
- ☐ dan lain-lain

Mengetahui

Pembimbing (.....)

Pembimbing (.....)

Mahasiswa YBS

Rism

(.....)

26

RENCANA PENELITIAN PROGRAM STUDI FARMASI PROGRAM SARJANA STIKES MUHAMMADIYAH GOMBONG

KEGIATAN : Eksperimen / Survei / Observasi / Wawancara/i / Seminar/ Konsul

PENELITIAN TAHAP : .....(Sesuai Proposal)

TEMA/JUDUL : Evaluasi Penggunaan Antibiotik Pada Pasien Diare Akut Anak di Puskesmas Kebumen I

TANGGAL : 16 Mei 2020, WAKTU : 22.12.

TEMPAT : .....

HASIL KEGIATAN (Lampiran foto-foto dokumentasi kegiatan serta penjelasannya)

CATATAN KHUSUS:

- ☐ Jika melibatkan orang lain (Sebutkan nama, PS & Universitas atau Lembaga));
- ☐ Kendala yang dihadapi; upaya mengatasi kendala
- ☐ dan lain-lain

Mengetahui

Pembimbing

(.....)

Pembimbing

(.....)

Mahasiswa YBS

(.....)

26

RENCANA PENELITIAN PROGRAM STUDI FARMASI PROGRAM SARJANA STIKES MUHAMMADIYAH GOMBONG

KEGIATAN : Eksperimen / Survei / Observasi / Wawancara/i / Seminar/ Konsul

PENELITIAN TAHAP : .....(Sesuai Proposal)

TEMA/JUDUL : Evaluasi Penggunaan Antibiotik Pada Pasien Diare Akut Anak di Puskesmar Kebumen I

TANGGAL : 26 Mei 2020, WAKTU : 09.28

TEMPAT : .....

HASIL KEGIATAN (Lampirkan foto-foto dokumentasi kegiatan serta penjelasannya)

CATATAN KHUSUS:

- ☐ Jika melibatkan orang lain (Sebutkan nama, PS & Universitas atau Lembaga));
- ☐ Kendala yang dihadapi; upaya mengatasi kendala
- ☐ dan lain-lain

Mengetahui

Pembimbing (.....)

Pembimbing (.....)

Mahasiswa YBS

(.....)

RENCANA PENELITIAN PROGRAM STUDI FARMASI PROGRAM SARJANA STIKES MUHAMMADIYAH GOMBONG

KEGIATAN : Eksperimen / Survei / Observasi / Wawancara/i / Seminar/.... Konsul

PENELITIAN TAHAP : .....

TEMA/JUDUL : Evaluasi Penggunaan Antibiotik Pada Pasien Diare Akut Anak di Puskesmas Kebumen I

TANGGAL : 30 Mei 2020, WAKTU : 09.07

TEMPAT : .....

HASIL KEGIATAN (Lampirkan foto-foto dokumentasi kegiatan serta penjelasannya)

CATATAN KHUSUS:

- ☐ Jika melibatkan orang lain (Sebutkan nama, PS & Universitas atau Lembaga));
- ☐ Kendala yang dihadapi; upaya mengatasi kendala
- ☐ dan lain-lain

Mengetahui

Pembimbing (.....)

Pembimbing (.....)

Mahasiswa YBS

(.....)

RENCANA PENELITIAN PROGRAM STUDI FARMASI PROGRAM SARJANA STIKES MUHAMMADIYAH GOMBONG

KEGIATAN : Eksperimen / Survei / Observasi / Wawancara/i / Seminar/ Konsul

PENELITIAN TAHAP : .....(Sesuai Proposal)

TEMA/JUDUL : Evaluasi Penggunaan Antibiotik Pada Pasien Diare Akut Anak ~~Pada Pasien diare~~ di Puskesmas Kebumen I

TANGGAL : 30 Mei 2020 ....., WAKTU : 20.42 .

TEMPAT : .....

HASIL KEGIATAN (Lampirkan foto-foto dokumentasi kegiatan serta penjelasannya)

ACC.

CATATAN KHUSUS:

- ☐ Jika melibatkan orang lain (Sebutkan nama, PS & Universitas atau Lembaga));
- ☐ Kendala yang dihadapi; upaya mengatasi kendala
- ☐ dan lain-lain

Mengetahui

Pembimbing (.....)

Pembimbing (.....)

Mahasiswa YBS (.....)