

- 124) 武久洋三：2025 年に向けたこれからの医療・介護ビジネス。徳島銀行・香川銀行、大阪，2012.1.19.
- 125) 武久洋三：日本の慢性期医療からみた LTAC。社会医療研究所，大阪，2012.1.21.
- 126) 武久洋三：日本の慢性期医療からみた LTAC。社会医療研究所，東京，2012.1.22.
- 127) 武久洋三：臨床アウトカムからみる日本型医療提供体制改革の重要ポイント。地域中核病院研究会／医療経営研究センター・コンタクス，東京，2012.1.24.
- 128) 武久洋三：これからの中小病院の戦略。東京青年医会，東京，2012.1.27.
- 129) 武久洋三：医療と介護の連携の今後のあり方—診療報酬・介護報酬同時改定をふまえて—。社団法人全国社会保険協会連合会，東京，2012.1.27.
- 130) 武久洋三：これからの中小民間病院の戦略。山口県慢性期医療協会，山口，2012.2.5.
- 131) 武久洋三：これからの民間病院の戦い。大阪府私立病院協会 青年部会，大阪，2012.2.29.
- 132) 武久洋三：(シンポジウム) これからの医療・介護。特定非営利活動法人日本介護経営学会，東京，2012.3.4.
- 133) 武久洋三：「介護療養病床の廃止延期」の波及と医療一般病床への影響。総合ユニコム株式会社『月刊シニアビジネスマーケット』，東京，2012.3.8.
- 134) 武久洋三：これからの慢性期医療。日本慢性期医療協会，大阪，2012.3.10.
- 135) 武久洋三：(シンポジウム) キーパーソンが読み解く、改定の狙いと積み残された課題。日経ヘルスケア，東京，2012.3.11.
- 136) 武久洋三：慢性期病院の立場から医療・介護同時改定を読み解く。新社会システム総合研究所，東京，2012.3.14.
- 137) 武久洋三：これからの慢性期医療。日本慢性期医療協会，東京，2012.3.17.

H. 知的財産権の出願・登録状況

(予定を含む。)

1. 特許取得
なし
2. 実用新案登録
なし
3. その他

研究協力者

東京大学大学院医学系研究科加齢医学	小島太郎
同上	亀山祐美
同上	山口 潔
同上	小川純人
同上	飯島勝矢
同上および日本老年医学会	大内尉義
東京大学高齢社会総合研究機構	鎌田 実
東北大学加齢医学研究所 老年医学研究分野	小坂陽一
京都大学大学院医学研究科	荻田美穂子
名古屋大学医学部附属病院 老年科	梅垣宏行

同上
名古屋大学大学院医学系研究科 地域在宅医療学・老年科学
杏林大学医学部附属病院 もの忘れセンター
同上
国立長寿医療研究センター
東京都健康長寿医療センター研究所
同上
全国老人保健施設協会
日本慢性期医療協会
同上

長谷川潤
鈴木裕介
木村紗矢香
山田如子
町田綾子
島田千穂
児玉寛子
江澤和彦
池端幸彦
美原 盤

研究成果の刊行に関する一覧表

主任研究者

秋下 雅弘
雑誌

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
Kojima T, Akishita M, Kameyama Y, Yamaguchi K, Yamamoto H, Eto M, Ouchi Y.	Factors associated with prolonged hospital stay in a geriatric ward of a university hospital in Japan.	J Am Geriatr Soc.		in press	2012
Yamada Y, Eto M, Yamamoto H, Akishita M, Ouchi Y.	Gastrointestinal hemorrhage and antithrombotic drug use in geriatric patients.	Geriatr Gerontol Int.		in press	2012
Ogita M, Utsunomiya H, Akishita M, Arai H.	Indications and practice for tube feeding in Japanese geriatricians: Implications of multidisciplinary team approach.	Geriatr Gerontol Int.	Feb 20	Epub ahead of print	2012
Akishita M, Yu J.	Hormonal effects on blood vessels.	Hypertens Res.	Feb 2	Epub ahead of print	2012
Kojima T, Akishita M, Nakamura T, Nomura K, Ogawa S, Iijima K, Eto M, Ouchi Y.	Polypharmacy as a risk for fall occurrence in geriatric outpatients.	Geriatr Gerontol Int.	Dec 23	Epub ahead of print	2011
Kojima T, Akishita M, Nakamura T, Nomura K, Ogawa S, Iijima K, Eto M, Ouchi Y.	Association of polypharmacy with fall risk among geriatric outpatients.	Geriatr Gerontol Int.	11	438-444	2011
Akishita M, Ohike Y, Yamaguchi Y, Iijima K, Eto M, Ouchi Y.	Obstructive sleep apnea exacerbates endothelial dysfunction in patients with metabolic syndrome.	J Am Geriatr Soc.	59	1565-1566	2011
Fukai S, Akishita M, Yamada S, Ogawa S, Yamaguchi K, Kozaki K, Toba K, Ouchi Y.	Plasma sex hormone levels and mortality in disabled older men and women.	Geriatr Gerontol Int.	11	196-203	2011
Nagai K, Kozaki K, Sonohara K, Akishita M, Toba K.	Relationship between interleukin-6 and cerebral deep white matter and periventricular hyperintensity in elderly women.	Geriatr Gerontol Int.	11	328-332	2011

分担研究者

江頭 正人
雑誌

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
-------	---------	------	----	-----	-----

Kojima T, Akishita M, Nakamura T, Nomura K, Ogawa S, Iijima K, Eto M, Ouchi Y.	Association of polypharmacy with fall risk among geriatric outpatients.	Geriatr Gerontol Int.	11	438-444	2011
Takemura A, Iijima K, Ota H, Son BK, Ito Y, Ogawa S, Eto M, Akishita M, Ouchi Y.	Sirtuin 1 retards hyperphosphatemia-induced calcification of vascular smooth muscle cells.	Arterioscler Thromb Vasc Biol.	31	2054-2062	2011
Yamaguchi Y, Hibi S, Ishii M, Hanaoka Y, Kage H, Yamamoto H, Yamauchi Y, Eto M, Nagase T, Ouchi Y.	Pulmonary features associated with being underweight in older men.	J Am Geriatr Soc.	59	1558-1560	2011

荒井 啓行
雑誌

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
荒井啓行	認知症の包括的課題 第14回認知症を語る会	日老医誌	49(10)	1171-1190	2011
Suzuki M, Uwano C, Ohru T, Ebihara T, Yamasaki M, Asamura T, Tomita N, Kosaka Y, Furukawa K, Arai H.	Shelter acquired pneumonia after a catastrophic earthquake in Japan.	J Am Geriatr Soc.	59(10)	1968-1970	2011
Furukawa K, Arai H.	Earthquake in Japan.	Lancet	377	1652	2011
Arai H.	A comprehensive strategy for dementia from primary prevention to end-stage management.	Psychogeriatrics	11	131-134	2011

神崎 恒一
書籍

著者氏名	論文タイトル名	書籍全体の編集者名	書籍名	出版社名	出版地	出版年	ページ
神崎恒一	第4章サルコペニアの症候別理解 第1節サルコペニアと老年症候群	監修 鈴木隆雄 編集 島田裕之	サルコペニアの基礎と臨床	真興交易	東京	2011	116-125
神崎恒一	Ⅲ臨床編 認知症の重症化に伴う医学的諸問題 各論 老年症候群と高齢者総合機能評価		認知症学(下) 日本臨床69 増刊号10(1012)	日本臨床社	東京	2011	503-510

雑誌

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
-------	---------	------	----	-----	-----

神崎恒一	薬剤起因生歩行障害	Geriat.Med.	49(4)	473-476	2011
Nagai K, Kozaki K, Sonohara K, Akishita M, Toba K.	Relationship between interleukin-6 and cerebral deep white matter and periventricular hyperintensity in elderly women.	Geriatr Gerontol Int.	11	328-332	2011
神崎恒一	骨粗鬆症と高齢者の虚弱	日老医誌	49(9)	971-975	2011
神崎恒一	CGAと包括的ケア	Aging & Health	20(3)	8-11	2011
神崎恒一	サルコペニアと生活機能障害	Modern Physician	31(11)	1323-1328	2011
長谷川浩、神崎恒一	認知症の地域連携－三鷹市・武蔵野市認知症医療連携の現状	内科	108(6)	1231-1234	2011
Toba K, Nagai K, Kimura S, Yamada Y, Machida A, Iwata A, Akishita M, and Kozaki K.	A new dorsiflexion measure device; A simple method to assess fall risks in the elderly.	Geriatr Gerontol Int.		in press	2012

遠藤 英俊
書籍

著者氏名	論文タイトル名	書籍全体の編集者名	書籍名	出版社名	出版地	出版年	ページ
遠藤英俊	高齢者の薬物療法		今日の治療指針 2012	医学書院	東京	2012	1367-1376

雑誌

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
Shimada H, Kato T, Ito K, Makizako H, Doi T, Yoshida D, Shimokata H, Washimi Y, Endo H, Suzuki T.	Relationship between Atrophy of the Medial Temporal Areas and Cognitive Functions in Elderly Adults with Mild Cognitive Impairment.	European Neurology	67	168-177	2012
今井幸充、長田久雄、本間昭、萱間真美、三上裕司、加藤伸司、木村隆次、石田光広、沖田裕子、遠藤英俊、池田学、半田幸子	認知機能障害を伴う要介護高齢者の日常生活動作と行動・心理症状を測定する新評価票	老年精神医学雑誌	22(10)	1155-1165	2011
梅本充子、遠藤英俊、三浦久幸	認知症高齢者における行動観察評価スケール NOSGER の検討 (第2報)	老年精神医学雑誌	22	1283-1290	2011
加藤昇平、遠藤英俊、鈴木祐太	認知機能障害の早期スクリーニングを目指して	人工知能学会論文誌	27(0)SP-X	1-6	2012
遠藤英俊	アルツハイマー病 地域の取り組み, 介護保険サービスの利用法	最新医学	66(9月増刊号)	124-131	2011

遠藤英俊、三浦久幸、佐竹昭介	認知症の終末期医療のあり方	診断と治療3	99(3)	523-525	2011
遠藤英俊、三浦久幸、佐竹昭介、洪英在	6 認知症の包括的ケア	JOURNAL OF CLINICAL REHABILITATION	20(6)	567-570	2011
遠藤英俊、佐竹昭介、三浦久幸、小杉尚子	5. 認知症のケアと非薬物療法の最前線	日老医誌	49(7)	795-799	2011
遠藤英俊、三浦久幸、佐竹昭介	2. ガランタミンの長期臨床効果	医薬ジャーナル	47(8)	2114-2118	2011
遠藤英俊、三浦久幸	介護保険改正の焦点は	医学のあゆみ	239(5)	580-584	2011
遠藤英俊、佐竹昭介、三浦久幸	ケアプランとアセスメント	精神科	19(2)	116-119	2011
遠藤英俊、三浦久幸、田代真耶子	回想法によるBPSDへの影響	Aging & Health	7	19-23	2011

荒井 秀典
雑誌

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
Yokoyama S, Yamashita S, Ishibashi S, Sone H, Oikawa S, Shirai K, Ohta T, Bujo H, Kobayashi J, Arai H, Harada-Shiba M, Eto M, Hayashi T, Gotoda T, Suzuki H, YamadaN.	Background to Discuss Guidelines for Control of Plasma HDL-Cholesterol in Japan.	J Atheroscler Thromb.		in press	2012
Takechi H, Sugihara Y, Kokuryu A, Nishida M, Yamada H, Arai H, Hamakawa Y.	Both conventional indices of cognitive function and frailty predict levels of care required in a long-term care insurance program for memory clinic patients in Japan.	Geriatr Gerontol Int.		in press	2012
Ogita M, Takechi H, Kokuryu A, Kondoh H, hamakawa Y, Arai H.	Identifying cognitive dysfunction using the nurses' rapidly clinical judgment in elderly inpatients.	J Clin Gerontol Geriatr.		in press	2012
Tamura Y, Murayama T, Minami M, Matsubara T, Yokode M, Arai H.	Ezetimibe ameliorates early diabetic nephropathy in db/db mice.	J Atheroscler Thromb.		in press	2012
Ogita M, Utsunomiya H, Akishita M, Arai H.	Indications and practice for tube feeding in Japanese geriatricians: Implications of multidisciplinary team approach.	Geriatr Gerontol Int.		in press	2012
Yamada M, Aoyama T, Arai H, Nagai K, Tanaka B, Uemura K, Mori S, Ichihashi N.	Complex obstacle negotiation exercise can prevent falls in community-dwelling elderly Japanese aged 75 years and older.	Geriatr Gerontol Int.		in press	2012

Yamada M, Uemura K, Mori S, Nagai K, Uehara T, Arai H, Aoyama T.	Faster decline of physical performance in higher levels of baseline locomotive function in older adults.	Geriatr Gerontol Int.		in press	2012
Yamada M, Arai H, Nagai K, Tanaka B, Uehara T, Aoyama T.	Development of a new index for fall risk assessment in older adults.	Int J Gerontol.		in press	2012
Arai H, Ouchi Y, Yokode M, Ito H, Uematsu H, Eto F, Oshima S, Ota K, Saito Y, Sasaki H, Tsubota K, Fukuyama H, Honda Y, Iguchi A, Toba K, Hosoi T, Kita T.	Toward the realization of a better aged society : Messages from Gerontology and Geriatrics.	Geriatr Gerontol Int.	12(1)	16-22	2012
Arai H, Ishibashi S, Bujo H, Hayashi T, Yokoyama S, Oikawa S, Kobayashi J, Shirai K, Ota T, Yamashita S, Gotoda T, Harada-Shiba M, Sone H, Eto M, Suzuki H, Yamada N.	Management of type IIb dyslipidemia.	J Atheroscler Thromb.	19	115-124	2012
Gotoda T, Shirai K, Ohta T, Kobayashi J, Yokoyama S, Oikawa S, Bujo H, Ishibashi S, Arai H, Yamashita S, Harada-Shiba M, Eto M, Hayashi T, Sone H, Suzuki H, and Yamada N.	Diagnosis and management of type I and type V hyperlipoproteinemia	J Atheroscler Thromb	19	1-12	2012
Kanamori H, Yanagita M, Nagai K, Matsubara T, Takechi H, Fujimaki K, Hara A, Usami K, Fukatsu A, Kita T, Matsubayashi K, Arai H.	Psychosocial quality of life of elderly hemodialysis patients using visual analogue scale : comparing with healthy elderly in Japan.	J Clin Gerontol Geriatr.	2	116-120	2011
Kanamori H, Nagai K, Matsubara T, Mima A, Yanagita M, Iehara N, Takechi H, Fujimaki K, Usami K, Fukatsu A, Kita T, Matsubayashi K, and Arai H.	Comparison of the psychosocial quality of life in hemodialysis patients between the elderly and non-elderly using a visual analogue scale : The importance of appetite and depressive mood.	Geriatr Gerontol Int.	12(1)	65-71	2011
Tamura Y, Murayama T, Minami M, Yokode M, and Arai H.	Differential effect of statins on diabetic nephropathy in db/db mice.	Int J Mol Med.	28	683-687	2011
Yamada M, Aoyama T, Arai H, Uemura K, Mori S, Nagai K, Tanaka B, Terasaki Y, and Iguchi M.	Effect of resistance training on physical performance and fear of falling in elderly with different levels of physical well-being.	Age and Ageing	40(5)	637-641	2011

Yamada M, Arai H, Nagai K, Uemura K, Mori S, Aoyama T.	Differential determinants of physical daily activities in frail and nonfrail community-dwelling older adults.	J Clin Gerontol Geriatr.	2	42-46	2011
Mima A, Abe H, Nagai K, Arai H, Matsubara T, Araki M, Torikoshi K, Tominaga T, Iehara N, Fukatsu A, Kita T, Doi T.	Activation of Src mediates PDGF-induced Smad1 phosphorylation and contributes to the progression of glomerulosclerosis in glomerulonephritis.	PLoS One.	6(3): e17929	1-11	2011
Yamada M, Aoyama T, Arai H, Nagai K, Tanaka B, Uemura K, Mori S, Ichihashi N.	Dual-task walk is a reliable predictor of falls in robust elderly adults.	J Am Geriatr Soc.	59(1)	163-164	2011

葛谷 雅文
雑誌

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
Kuzuya M, Enoki H, Hasegawa J, Izawa S, Hirakawa Y, Shimokata H, Iguchi A.	Impact of caregiver burden on adverse health outcomes in community-dwelling dependent older care recipients.	Am J Geriatr Psychiatry.	19	382-91	2011
Kuzuya M, Hasegawa J, Hirakawa Y, Enoki H, Izawa S, Hirose T, Iguchi A.	Impact of informal care levels on discontinuation of living at home in community-dwelling dependent elderly using various community-based services.	Arch Gerontol Geriatr.	52	127-132	2011
Hirano A, Suzuki Y, Kuzuya M, Onishi J, Hasegawa J, Ban N, Umegaki H.	Association between the caregiver's burden and physical activity in community-dwelling caregivers of dementia patients.	Arch Gerontol Geriatr.	52	295-298	2011
Aoyama M, Suzuki Y, Onishi J, Kuzuya M.	Physical and functional factors in activities of daily living that predict falls in community-dwelling older women.	Geriatr Gerontol Int.	11	348-357	2011

高橋 龍太郎
雑誌

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
中川威、増井幸恵、呉田陽一、高山緑、高橋龍太郎、権藤恭之	高齢者の語りにみる生 (life) の意味	老年社会科学	32	422-433	2011
高橋龍太郎	高齢者の入浴事故	公衆衛生	75	595-599	2011
島田千穂、高橋龍太郎	高齢者終末期における多職種間の連携	日老医誌	48	221-226	2011

Liehr P, Nishimura C, Ito, M, Wands LM, and Takahashi R.	A lifelong journey of moving beyond wartime trauma for survivors from Hiroshima and Pearl Harbor.	Advances in Nursing Science.	34	215-228	2011
--	---	------------------------------	----	---------	------

鳥羽 研二
書籍

著者氏名	論文タイトル名	書籍全体の編集者名	書籍名	出版社名	出版地	出版年	ページ
藤谷順子、鳥羽研二	(編著)	藤谷順子、鳥羽研二	誤嚥性肺炎	医歯薬出版	東京	2011	全213

雑誌

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
鳥羽研二	老年内科 標榜をめざして 老年症候群の考え方と高齢者の 寝たきりの原因と対策	日本医事新報	4552	43-46	2011
鳥羽研二	服薬コンプライアンスとアド ヘレンス	認知症学	(下)	22-25	2011
鳥羽研二	(企画含) 老年医学・医療の最 先端	医学のあゆみ	239(5)	418-424	2011
角保徳、小澤総喜、 道脇幸博、鷺見幸彦、 鳥羽研二	軽度認知症患者の口腔状況と 口腔管理方法の構築への試み	日老医誌	49(1)	90-98	2011

堀江 重郎
書籍

著者氏名	論文タイトル名	書籍全体の編集者名	書籍名	出版社名	出版地	出版年	ページ
堀江重郎	多発性嚢胞腎 - cAMP とバソプレシンV2受容 体拮抗薬	和泉誠	バソプレシンと 受容体拮抗-その 基礎と臨床-	メディカル レビュー社	東京	2011	115-123

雑誌

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
井手久満、堀江重郎	最新用語解説 基礎 (第36回) 唾液テストステロン.	骨粗鬆症治療	10(3)	240-242	2011
久末伸一、井手久満、 堀江重郎	Men's Health研究の現状と 課題 (特集 脱・草食系男子 --男性応援素材研究)	Food style 21	15(9)	27-30	2011
堀江重郎	血尿 (日常診療でよくみる症 状・病態--診断の指針・治療の 指針)	総合臨床	60(-)	1196-1201	2011

堀江重郎	健康長寿バイオマーカーとしてのテストステロン	medicina	48(12)	1883-1885	2011
井手久満、堀江重郎	前立腺癌とビタミンD (特集 ビタミンD—基礎と臨床—VI)	THE BONE	25(3)	259-262	2011

武久 洋三
雑誌

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
武久洋三	慢性期病床と地域連携	日本慢性期医療 協会機関誌JMC	No.76	7-14	2011
矢野諭、武久洋三	慢性期医療の臨床指標 (Clinical Indicator) の導入と 活用—慢性期医療における 診療の質を測る—	日本医療・病院 管理学会誌	48(2)	23-33	2011
武久洋三	慢性期医療と在宅診療の新 たな連携	医学のあゆみ	239(5)	541-546	2011
武久洋三	《療養病床、介護施設での高齢 者医療》療養病床で行う医療	臨床雑誌内科	108(6)	1200-1205	2011
武久洋三	24年度診療報酬・介護報酬同 時改定への期待 協会として どう取り組むか—そのポイント 解説	日本慢性期医療 協会機関誌JMC	No.78	7-12	2011
武久洋三	2025年に向けて良質な慢 性期医療の確立をめざして 3事業立ち上げの趣旨	日本慢性期医療 協会機関誌JMC	No.79	7-12	2012
武久洋三	血管内脱水に対する間歇的補 液療法の効果:経消化管補液の 単独および併用療法について	日老医誌	49(1)	107-113	2012



LETTERS TO THE EDITOR

FACTORS ASSOCIATED WITH PROLONGED HOSPITAL STAY IN A GERIATRIC WARD OF A UNIVERSITY HOSPITAL IN JAPAN

To the Editor: We read with interest the article by Lakhandanand colleagues,¹ which showed the high prevalence and worsening of geriatric syndrome during acute care hospitalization. Because falls, incontinence, impairment in activities of daily living (ADLs), and other geriatric syndrome components increase the care burden and limit discharge planning in acute care hospitals, geriatric syndrome might cause prolonged hospital stays. A prolonged hospital stay is one of the major determinants of medical cost and is thus a serious problem in geriatric medicine. Previous studies have shown that clinical events during hospitalization,^{2,3} basic ADLs,⁴ and nonmedical factors such as delayed transfer to a nursing facility or disagreement on the discharge plan among family members⁵ are risk factors for prolonged hospital stay. Furthermore, because older adults have multiple comorbid conditions and are susceptible to adverse drug reactions (ADRs), these factors might be related to length of hospital stay. To test this hypothesis, the association between geriatric conditions such as geriatric syndrome, ADLs, and ADRs and prolonged hospital stay were comprehensively investigated using the database of the geriatric ward of the University of Tokyo

Hospital from 1995 to 2010. The ethics committee of the Graduate School of Medicine, University of Tokyo approved this study.

All records of patients aged 65 and older from 1995 to 2010 were reviewed. Data on length of stay, acute hospitalization, ADRs, body mass index (BMI), number of diseases and drugs, geriatric syndrome, and Barthel Index were collected. Twenty-three components of geriatric syndrome such as falls, cognitive impairment, urinary incontinence, constipation, and insomnia were included in the analysis. Records lacking information on any of the variables were excluded. Cases of scheduled short-term hospitalization were excluded. Finally, the records of 1,616 patients were analyzed (mean age 78.3 ± 7.0, 52% male). All data were obtained soon after admission. Values are expressed as means ± standard deviations and were analyzed using JMP version 9.0.2 (SAS Institute, Inc., Cary, NC). *P* < .05 was considered statistically significant.

Mean length of stay was 27.3 ± 22.6 days (range 1–322 days). The results of univariate and multivariate analyses for length of stay are shown in Table 1. Multiple stepwise regression analysis showed that ADRs, number of diseases, and number of geriatric syndrome components were positively associated with longer hospital stay, whereas age, BMI, and Barthel Index were negatively associated. The number of geriatric syndrome components was

Table 1. Characteristics of Study Patients and Analyses for Length of Hospital Stay (N = 1616)

Characteristic	Value	Univariate Analysis (R or Hospital Stay, Days, Mean ± SD)	Standardized Regression Coefficient
Age, mean ± SD	78.3 ± 7.0	0.001	-0.099 ^d
Sex, n (%)			
Female	778 (48.1)	26.8 ± 20.2	
Male	838 (51.9)	27.6 ± 24.6 ^a	
Acute hospitalization, n (%)			
No	300 (18.5)	26.2 ± 21.0	
Yes	1316 (81.5)	31.8 ± 28.2 ^{a,d}	
Adverse drug reaction, n (%)			
No	190 (11.8)	26.4 ± 19.5	0.078 ^c
Yes	1426 (88.2)	33.3 ± 38.1 ^{a,d}	
Body mass index, kg/m ² , mean ± SD	22.0 ± 4.1	-0.59 ^d	-0.062 ^b
Barthel Index (points out of 100), mean ± SD	83.1 ± 26.1	-0.178 ^d	-0.13 ^d
Number of diseases, mean ± SD	5.3 ± 2.3	1.43 ^c	0.082 ^c
Number of drugs, mean ± SD	6.8 ± 3.6	0.411 ^b	-
Number of geriatric syndrome components, mean ± SD	4.6 ± 3.6	1.66 ^d	0.19 ^d

All data were collected soon after admission. For sex, acute hospitalization, and adverse drug reactions, a simple *t*-test was performed for univariate analysis, and values are expressed as mean ± standard deviation (SD).

^a*P*-values are for comparison to female or no. Pearson correlation coefficients (*R*) are shown for the remaining factors in univariate analysis. All variables shown were included in stepwise regression analysis, and factors significantly associated were analyzed in multiple regression analysis (coefficient of determination = 0.32).

^b*P* < .05.

^c*P* < .005.

^d*P* < .001.

significantly associated with hospital stay independent of number of diseases.

The present analysis demonstrated that geriatric factors such as ADRs, multiple diseases, low BMI, ADL dependence, and number of geriatric syndrome components were associated with longer hospital stay in a large group. The finding that ADRs are a risk for prolonged hospital stay is consistent with a previous report,⁶ and ADL dependence has been reported as a risk in a smaller group.⁴ Furthermore, the number of geriatric syndrome components and undernutrition were risk factors for prolonged hospital stay in a large-scale study. Frailty, which is also known to be a risk factor,⁷ was not examined independently in the present study, but ADL dependence and undernutrition, both of which are major components of frailty, were found to be risk factors, so it is reasonable to assume that frailty was associated with length of hospital stay in the current cohort as well. The present study revealed that the accumulation of geriatric syndrome components was a risk factor for prolonged hospital stay independent of multiple diseases and, presumably, frailty. Thus, geriatric syndrome should be comprehensively managed during hospitalization. The reason for the negative association between age and length of stay is unclear, but the presence of young-old patients with disability or complicated conditions on the geriatric ward might have influenced the results.

In summary, the present study provides new insight into the significance of geriatric conditions in relation to prolonged hospital stay in older adults. ADL dependence, undernutrition, ADRs, and geriatric syndrome should be carefully assessed and interventions provided when caring for older inpatients.

Taro Kojima, MD
Masahiro Akishita, MD, PhD
Yumi Kameyama, MD, PhD
Kiyoshi Yamaguchi, MD, PhD
Hiroshi Yamamoto, MD, PhD
Masato Eto, MD, PhD
Yasuyoshi Ouchi, MD, PhD
Department of Geriatric Medicine
Graduate School of Medicine
University of Tokyo, Tokyo, Japan

ACKNOWLEDGMENTS

Conflict of Interest: The editor in chief has reviewed the conflict of interest checklist provided by the authors and has determined that the authors have no financial or any other kind of personal conflicts with this paper.

Author Contributions: TK: acquisition of subjects and data analysis, interpretation of data, and drafting of manuscript. MA: coordinator of study concept and design, and study supervision. YK, KY, and HY: acquisition of subjects and data. ME: data analysis and interpretation of data. YO: study supervision.

Sponsor's Role: The sponsors had no role in the design, methods, data collections, analysis and preparation of this paper.

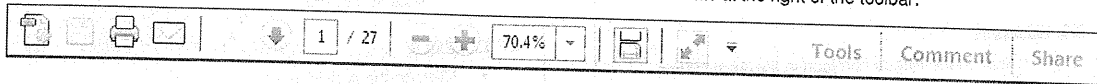
REFERENCES

1. Lakhan P, Jones M, Wilson A et al. A prospective cohort study of geriatric syndromes among older medical patients admitted to acute care hospitals. *J Am Geriatr Soc* 2011;59:2001-2008.
2. Nobili A, Licata G, Salerno F et al. Polypharmacy, length of hospital stay, and in-hospital mortality among elderly patients in internal medicine wards. The REPOSI Study. *Eur J Clin Pharmacol* 2011;67:507-519.
3. Hauck K, Zhao X. How dangerous is a day in hospital? A model of adverse events and length of stay for medical inpatients. *Med Care* 2011;49:1068-1075.
4. Umegaki H, Ando F, Shimokata H et al. Factors associated with long hospital stay in geriatric wards in Japan. *Geriatr Gerontol Int* 2003;3:120-127.
5. Foer D, Ornstein K, Soriano TA et al. Nonmedical factors associated with prolonged hospital length of stay in an urban homebound population. *J Hosp Med* 2012;7:73-78.
6. Hoonhout LH, de Bruijne MC, Wagner C et al. Nature, occurrence and consequences of medication-related adverse events during hospitalization: A retrospective chart review in the Netherlands. *Drug Saf* 2010;33:853-864.
7. Satish S, Winograd CH, Chavez C et al. Geriatric targeting criteria as predictors of survival and health care utilization. *J Am Geriatr Soc* 1996; 44:914-921.

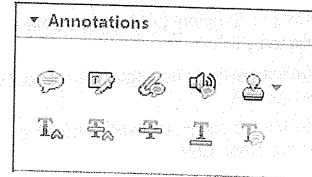
USING e-ANNOTATION TOOLS FOR ELECTRONIC PROOF CORRECTION

Required software to e-annotate PDFs: **Adobe Acrobat Professional** or **Adobe Reader** (version 8.0 or above). (Note that this document uses screenshots from **Adobe Reader X**)
 The latest version of Acrobat Reader can be downloaded for free at: <http://get.adobe.com/reader/>


Once you have Acrobat Reader open on your computer, click on the Comment tab at the right of the toolbar:



This will open up a panel down the right side of the document. The majority of tools you will use for annotating your proof will be in the Annotations section, pictured opposite. We've picked out some of these tools below:



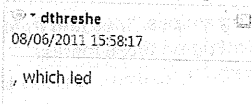
1. Replace (Ins) Tool – for replacing text.

 Strikes a line through text and opens up a text box where replacement text can be entered.


How to use it

- Highlight a word or sentence.
- Click on the Replace (Ins) icon in the Annotations section.
- Type the replacement text into the blue box that appears.

standard framework for the analysis of microeconomics. Nevertheless, it also led to the emergence of a number of strategic substitutes. The number of competitors is that the structure of the industry is important. Henceforth, we open the black board



2. Strikethrough (Del) Tool – for deleting text.


 Strikes a red line through text that is to be deleted.

How to use it

- Highlight a word or sentence.
- Click on the Strikethrough (Del) icon in the Annotations section.

there is no room for extra profits and the number of firms are zero and the number of firms (net) values are not determined by Blanchard and Kiyotaki (1987). In effect competition in general equilibrium is a classical framework assuming monopoly and an exogenous number of firms

3. Add note to text Tool – for highlighting a section to be changed to bold or italic.

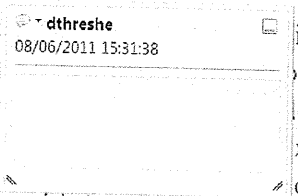
 Highlights text in yellow and opens up a text box where comments can be entered.

How to use it


- Highlight the relevant section of text.
- Click on the Add note to text icon in the Annotations section.
- Type instruction on what should be changed regarding the text into the yellow box that appears.

dynamic responses of mark-ups consistent with the VAR evidence

sation. The number of competitors is that the structure of the sector is consistent with the demand



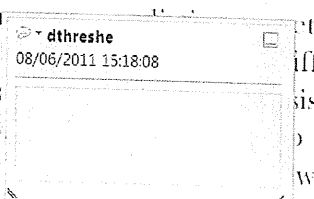
4. Add sticky note Tool – for making notes at specific points in the text.

 Marks a point in the proof where a comment needs to be highlighted.

How to use it

- Click on the Add sticky note icon in the Annotations section.
- Click at the point in the proof where the comment should be inserted.
- Type the comment into the yellow box that appears.

and supply shocks. Most of the number of competitors is that the structure of the sector



USING e-ANNOTATION TOOLS FOR ELECTRONIC PROOF CORRECTION

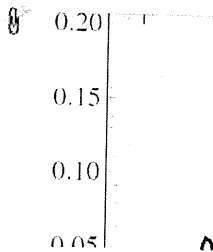
5. Attach File Tool – for inserting large amounts of text or replacement figures.

Inserts an icon linking to the attached file in the appropriate place in the text.

How to use it

- Click on the Attach File icon in the Annotations section.
- Click on the proof to where you'd like the attached file to be linked.
- Select the file to be attached from your computer or network.
- Select the colour and type of icon that will appear in the proof. Click OK.

END



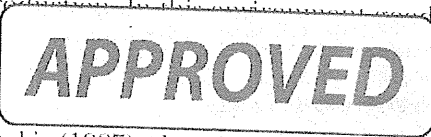
6. Add stamp Tool – for approving a proof if no corrections are required.

Inserts a selected stamp onto an appropriate place in the proof.

How to use it

- Click on the Add stamp icon in the Annotations section.
- Select the stamp you want to use. (The Approved stamp is usually available directly in the menu that appears).
- Click on the proof where you'd like the stamp to appear. (Where a proof is to be approved as it is, this would normally be on the first page).

of the business cycle, starting with the
 on perfect competition, constant ret
 production. In this minimum cost
 ce
 he
 et
 otaki (1987). has introduced produc
 general equilibrium models with nomin
 and



▼ Drawing Markups

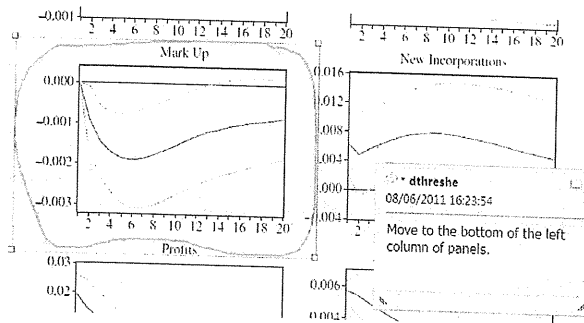


7. Drawing Markups Tools – for drawing shapes, lines and freeform annotations on proofs and commenting on these marks.

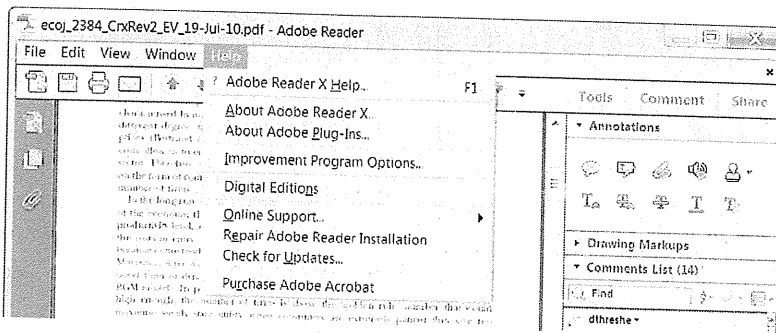
Allows shapes, lines and freeform annotations to be drawn on proofs and for comment to be made on these marks..

How to use it

- Click on one of the shapes in the Drawing Markups section.
- Click on the proof at the relevant point and draw the selected shape with the cursor.
- To add a comment to the drawn shape, move the cursor over the shape until an arrowhead appears.
- Double click on the shape and type any text in the red box that appears.



For further information on how to annotate proofs, click on the Help menu to reveal a list of further options:



LETTER TO THE EDITOR

Gastrointestinal hemorrhage and antithrombotic drug use in geriatric patients

Yoko Yamada, Masato Eto, Hiroshi Yamamoto, Masahiro Akishita and Yasuyoshi Ouchi

Department of Geriatric Medicine, Graduate School of Medicine, University of Tokyo, Tokyo, Japan

Dear Editor,

Recent guidelines recommend the aggressive use of antithrombotic medications in patients at high risk of thrombotic events. Although the risk of thrombosis increases with age, critical bleeding related to antithrombotic drug use is frequently seen in older patients.¹ Thus, guideline-directed use of antithrombotic medications might cause more harm than benefits among older patients with multiple comorbid conditions.^{2,3} To increase the benefit-to-harm ratio, geriatricians might take care to stratify the risks and totally manage the patients. We hypothesized that such geriatricians' approaches lead to harmless use of antithrombotic medications. For this purpose, we carried out a case-control study to investigate the association between gastrointestinal hemorrhage and antithrombotic drug use.

We analyzed the inpatient registry of the Department of Geriatric Medicine, University of Tokyo Hospital between 1996 and 2007 (2249 patients) to identify patients ≥ 60 years-of-age who were admitted to the department as a result of gastrointestinal hemorrhage. The database was searched using the keywords of gastrointestinal hemorrhage, melena, hematemesis and anemia. Then, medical records of the extracted patients

were reviewed. Finally, a total of 47 patients were defined to fulfil the criteria. Next, using risk-set sampling, we selected four controls per case matched for age, sex and the timing of hospitalization from the same inpatient registry. The data were obtained on prescriptions of antithrombotic drugs (aspirin, warfarin, cilostazol and ticlopidine) and anti-ulcer drugs (proton pump inhibitors and H2 blockers), and comorbid conditions.

Among the cases, causes of gastrointestinal hemorrhage were ulcer (48.9%), cancer (8.5%), ischemic colitis (6.3%), colon diverticulum (4.2%), Mallory-Weiss syndrome (4.2%) and hemorrhoid (2.1%), and 21.2% remained uncertain. As shown in Table 1, 17 cases and 71 controls were taking antithrombotic drugs. Of them, aspirin was most frequently prescribed both in case and control groups. There was no significant difference between case and control groups in the prescription rate of antithrombotic drugs ($\chi^2 = 0.20$, $P = 0.65$) and that of aspirin ($\chi^2 = 0.43$, $P = 0.51$). Furthermore, unadjusted logistic regression analyses showed that antithrombotic drug use and antiulcer drug use was not associated with gastrointestinal hemorrhage. The odds ratio of antithrombotic drug use for gastrointestinal hemorrhage was 0.91 (95% CI 0.46–1.81) after adjustment by age, sex and anti-ulcer drug

Table 1 Age, sex and medication use in case and control subjects, and unadjusted odds ratios for gastrointestinal hemorrhage

	Cases ($n = 47$)	Controls ($n = 189$)	Odds ratio (95% CI)
Age (years)	78 ± 10	77 ± 9	1.02 (0.98–1.06)
Men (women = 0, men = 1)	29 (61.7%)	120 (63.5%)	0.93 (0.48–1.79)
Antithrombotic drugs (no = 0, yes = 1)	16 (34.0)	71 (37.5)	0.86 (0.44–1.68)
Aspirin (no = 0, yes = 1)	10 (21.3)	49 (25.9)	0.77 (0.36–1.67)
Anti-ulcer drugs (no = 0, yes = 1)	18 (38.2)	45 (23.8)	0.67 (0.35–1.29)

Letter to the Editor

use. Exclusion of the patients with cancer-related hemorrhage did not fundamentally influence the analytical results (data not shown).

This small case-control study showed no association of admission as a result of gastrointestinal hemorrhage with the use of antithrombotic drugs or aspirin among older patients. As most of the patients were managed by geriatricians in our department, the finding might be limited to the particular facility or cohort, but might not be extended to the general population. It is suggested, however, that geriatricians can make an appropriate decision on the indication and management of antithrombotic drugs for older patients. Although no studies have shown comparable findings in terms of gastrointestinal bleeding, geriatric evaluation and management has been reported to be effective to reduce serious adverse drug events.⁴ A recent review on the management of antiplatelet agents⁵ also recommended comprehensive strategies to reduce the risk of hemorrhagic complications. Prospective studies with a large sample size are required to confirm this issue. Nevertheless, it is certain that the use of antithrombotic medi-

cations should be carefully determined by considering the risk/benefit balance of each patient.

References

- 1 Garcia Roriguez LA, Jick H. Risk of upper gastrointestinal bleeding and perforation associated with individual non-steroidal anti-inflammatory drugs. *Lancet* 1994; **343**: 769-772.
- 2 Boyd CM, Darer J, Boult C, Fried LP, Boult L, Wu AW. Clinical practice guidelines and quality of care for older patients with multiple comorbid diseases: implications for pay for performance. *JAMA* 2005; **294**: 716-724.
- 3 Man-Son-Hing M, Laupacis A. Anticoagulant-related bleeding in older persons with atrial fibrillation: physicians' fears often unfounded. *Arch Intern Med* 2003; **163**: 1580-1586.
- 4 Schumader KE, Hanlon JT, Pieper CF *et al*. Effects of geriatric evaluation and management on adverse drug reactions and suboptimal prescribing in the frail elderly. *Am J Med* 2004; **116**: 394-401.
- 5 Kalyanasundaram A, Lincoff AM. Managing adverse effects and drug-drug interactions of antiplatelet agents. *Nat Rev Cardiol* 2011; **8**: 592-600.

ORIGINAL ARTICLE

Indications and practice for tube feeding in Japanese geriatricians: Implications of multidisciplinary team approach

Mihoko Ogita,¹ Hiroko Utsunomiya,² Masahiro Akishita³ and Hidenori Arai¹

¹Department of Human Health Sciences, Kyoto University Graduate School of Medicine, ²Department of Community Network and Collaborative Medicine, Kyoto University Hospital, Kyoto, and ³Department of Geriatric Medicine, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan

Aim: The aim of this study was to examine how geriatricians decide the indication of tube feeding in the elderly with eating difficulty as a result of several disorders, and to determine the factors associated with their decision making and interventions for dysphagia.

Methods: The design was a cross-sectional study. All board-certified geriatricians in the Japan Geriatrics Society were recruited to this study in September 2010. We sent questionnaires to 1469 geriatricians. Among them, 629 agreed to participate. The survey consisted of self-administered questionnaires regarding demographic information, indications of tube feeding and interventions for dysphagia before tube feeding.

Results: We analyzed the remaining 555 questionnaires after excluding incomplete ones. Over 90% of geriatricians answered that "neurological disorder" and "stroke" are indications, whereas 46.8% of them answered that "dementia" is an indication for tube feeding. Geriatricians who organize a multidisciplinary team conference tended to carry out more "interventions for dysphagia before the prescription of tube feeding" compared with the reference group (odds ratio 2.1–8.7) after multivariate adjustment.

Conclusions: The results show that approximately half of the geriatricians prescribe tube feeding when the patient has dementia with loss of appetite or apraxia for eating. There is no consensus among Japanese geriatricians about the indication of tube feeding for demented people. We suggest that guidelines for tube feeding in the elderly should be established. Furthermore, a multidisciplinary approach would be desirable for decision making for tube feeding. *Geriatr Gerontol Int* 2012; ●●: ●●–●●.

Keywords: elderly, geriatrician, multidisciplinary team, percutaneous endoscopic gastrostomy, tube feeding.

Introduction

Many older patients have nutritional problems caused by eating difficulties as a result of stroke, cancer,

dementia and other conditions. When the patients have a functional gastrointestinal tract and they cannot take sufficient nutrition orally, tube feeding is an option. Percutaneous endoscopic gastrostomy (PEG) is the preferential route when enteral nutrition is expected to last for a longer period of time, because it is associated with better nutritional status and a lower incidence of aspiration than nasogastric tube (NGT).¹ PEG was originally developed for pediatric use by Gauderer in 1980.² However, thereafter PEG has become the most

Accepted for publication 2011 December 25.

Correspondence: Professor Hidenori Arai MD PhD, Department of Human Health Sciences, Kyoto University Graduate School of Medicine, 53 Kawahara-cho, Shogoin, Sakyo-ku, Kyoto 606-8507, Japan. Email: harai@kuhp.kyoto-u.ac.jp

common way to supply artificial enteral nutrition in the elderly, including dementia patients. The number of people on PEG is increasing because of the improved simplicity and safety. Approximately 5–30% of the advanced dementia patients in nursing homes are on tube feeding in Europe and the USA; whereas, in Japan, approximately 50% of those are on tube feeding.^{3–6} Thus, the percentage of tube feeding including PEG for dementia patients is higher in Japan than that in Western countries. However, recent studies have questioned the appropriateness of tube feeding in these patients. The decision of the practice or the withholding of tube feeding in patients with dementia is a difficult challenge among geriatricians and many other health-care professionals, as they need to make a decision with clinical ethical dilemmas. Furthermore, the quality of life (QOL) in the elderly with tube feeding and its effect on long-term survival have not yet been clarified,^{7–13} and neither has a guideline for tube feeding in the elderly, especially in dementia patients. Accordingly, tube feeding is the focus of some extremely complex legal and ethical questions. Therefore, it is important to study the current situation of tube feeding for the elderly in Japan.

When we make a decision on tube feeding, comprehensive assessment of the patient, such as nutrition, cognition and swallowing function, is important and the assessment should be based on a multidisciplinary team approach. Previous studies showed the effectiveness of inpatient geriatric evaluation and management; that is, comprehensive geriatric assessment (CGA).¹⁴ A multidisciplinary approach might be required for medical and nursing care of elderly patients, especially when we need to make a complicated decision, such as that of tube feeding. However, it is unknown whether the team approach can affect the decision making for tube feeding and interventions for dysphagia.

Therefore, the aim of the present study was to examine how geriatricians decide on the indication of tube feeding in the elderly with eating difficulty as a result of various disorders, and to determine whether the team approach can affect their decision making and interventions for dysphagia.

Methods

The design was a cross-sectional study. All board-certified geriatricians in the Japan Geriatrics Society were recruited to the present study in September 2010. We separately sent self-administered questionnaires to 1469 geriatricians by post and collected them from October to December 2010. These geriatricians were chosen because of their experience in taking care of patients who require tube feeding, and carry out CGA by organizing multidisciplinary team conferences. The present study was approved by the Ethics Committee

of Kyoto University Graduate School and Faculty of Medicine (no. E984, 2010).

The questionnaires included demographic information, such as age, sex, place of employment, and clinical experience, reference guidelines for tube feeding, aims and indications of tube feeding in geriatrics, interventions for dysphagia before tube feeding, and multidisciplinary team approach if tube feeding is indicated. It was explained in the questionnaires that the term “elderly” was defined as people over the age of 75 years and those who require nursing care, and tube feeding included NGT, PEG and enterostomy tube.

We carried out descriptive analyses for each item in the questionnaire. The χ^2 -test or *t*-test was used to compare the differences of place of employment and clinical experience. Logistic regression analyses were carried out to evaluate the differences of the frequencies and conference members according to the indication for tube feeding, and the interventions for dysphagia before tube feeding. Each item in the indication for tube feeding or interventions for swallowing disorder was adjusted for sex, working place and clinical experience of geriatricians. The frequency and number of members in a multidisciplinary conference were divided into five categories: not at all, occasional and less than five different health-care professionals, occasionally and ≥ 5 different health-care professionals, every time and less than five different health-care professionals, and every time and ≥ 5 different health-care professionals. The Statistical Package for Social Sciences version 18.0J (SPSS Japan, Tokyo, Japan) was used for statistical analysis. All probability values were two-tailed with a significant level of $P < 0.05$, and all confidence intervals were estimated at the 95% level.

Results

We sent a questionnaire to 1469 board-certified geriatricians, and 51 were returned as a result of being undeliverable because of wrong address. Among the rest, 629 agreed to participate in the present study. The response rate was 44.4%. After excluding the questionnaires with missing data, we analyzed the remaining 555 questionnaires. The prevalence of doctors aged over 60 years and male doctors was 34.6% and 89.2%, respectively. We found that 43.8% of the geriatricians had a clinical experience of more than 30 years, and 63.7% were working in acute hospitals, 30.7% in a clinic and 3.9% in long-term care facilities.

Table 1 shows the percentage of geriatricians who follow the guidelines and the purpose for tube feeding according to the geriatrician’s place of employment and clinical experience. A total of 68% of geriatricians did not use any guideline for tube feeding. Among geriatricians following guidelines for tube feeding, 137 used “Guideline of Parenteral and Enteral Nutrition (EN) in

Table 1 Use of guidelines and the aims of tube feeding according to place of employment and clinical experience

Questions	Characteristics of geriatricians				P-value	Clinical experience			Total n = 555	
	Place of employment	Hospital n = 360	Clinic n = 166	Long-term care n = 20		Other [†] n = 9	<30 years n = 317	≥30 years n = 238		P-value
Do you use any guidelines for TF in geriatrics?*										
Guideline of Parenteral and EN in Japan*1		84 (23.3)	48 (28.9)	4 (20.0)	1 (11.1)	ND	87 (27.4)	50 (21.0)	0.082	137 (24.7)
Guideline of PEG in Japan*2		51 (14.2)	21 (12.7)	4 (20.0)	1 (11.1)	ND	41 (12.9)	36 (15.1)	0.460	77 (13.9)
Guideline of Parenteral and EN in America*3		13 (3.6)	11 (6.6)	0 (0.0)	0 (0.0)	ND	11 (3.5)	13 (5.5)	0.253	24 (4.3)
Guideline of Parenteral and EN for elderly in Europe*4		9 (2.5)	11 (6.6)	0 (0.0)	1 (1.1)	ND	9 (2.8)	12 (5.0)	0.178	21 (3.8)
Not using guideline for TF		253 (70.3)	106 (63.9)	10 (50.0)	7 (77.8)	ND	209 (65.9)	167 (70.2)	0.291	376 (67.7)
What are the aims of TF in geriatrics?§										
Improvement of survival		63 (17.5)	29 (17.5)	6 (30.0)	0 (0.0)	ND	54 (17.0)	44 (18.5)	ND	98 (17.7)
Improvement of general condition and prevention of complications		201 (55.8)	93 (56.0)	12 (60.0)	3 (33.3)	-	163 (51.4)	146 (61.3)	-	309 (55.7)
Improvement of activities of daily living		17 (4.7)	9 (5.4)	0 (0.0)	1 (11.1)	-	22 (6.9)	5 (2.1)	-	27 (4.9)
Improvement of quality of life		24 (6.7)	9 (5.4)	2 (10.0)	2 (22.2)	-	24 (7.6)	13 (5.5)	-	37 (6.7)
Satisfaction of patient		15 (4.2)	13 (7.8)	0 (0.0)	2 (22.2)	-	19 (6.0)	11 (4.6)	-	30 (5.4)
Burden of caregiver		5 (1.4)	9 (5.4)	0 (0.0)	0 (0.0)	-	6 (1.9)	8 (3.4)	-	14 (2.5)
Length of hospital stay		3 (0.8)	0 (0.0)	0 (0.0)	0 (0.0)	-	3 (0.9)	0 (0.0)	-	3 (0.5)
Living will		27 (7.5)	3 (1.8)	0 (0.0)	1 (11.1)	-	20 (6.3)	11 (4.6)	-	31 (5.6)
Other		5 (1.4)	1 (0.6)	0 (0.0)	0 (0.0)	-	6 (1.9)	0 (0.0)	-	6 (1.1)

Number (%). P-values were tested by χ^2 -test. [†]Other included part-time doctors, retired doctors, researchers and so on. ^{*}Multiple answers were allowed. [§]Simple answer was allowed for nine items. *1 From Japanese Society for Parenteral and Enteral Nutrition *2 From Japan Gastroenterological Endoscopy Society *3 From American Society for Parenteral and Enteral Nutrition *4 From European Society for Gastroenterological Endoscopy Society. EN, enteral nutrition; ND, not determined; PEG, percutaneous endoscopic gastrostomy; TF, tube feeding.

Japan" from the Japanese Society for Parenteral and EN. For the purpose for tube feeding, more than half of the geriatricians chose "improvement of general condition or prevention of complications." However, a few geriatricians chose "improvement of QOL," "satisfaction of patient" or "living will." The working place or clinical experience did not affect the aims of tube feeding placement.

Table 2 shows the indication for tube feeding and the interventions for dysphagia before tube feeding according to place of employment and clinical experience. Among the seven target indications for tube feeding in the elderly, over 90% of the geriatricians answered that "neurological disorders other than dementia" and "stroke" are indications for tube feeding. Over 80% of the geriatricians answered that "head injury or facial trauma" and "oropharyngeal malignancy" are also an indication. In contrast, 46.8% of the geriatricians answered that "dementia" is an indication for tube feeding, and 65.9% of the geriatricians answered that "aspiration-prone frail elderly without comorbidities" is an indication. The place of employment was not associated with the judgment for the indication. The percentage of geriatricians who answered that "head injury or facial trauma" and "neurological disorders other than dementia" were an indication for tube feeding was significantly higher in those with less than 30 years of clinical experience than in those with more than 30 years of clinical experience" (head injury or facial trauma; $P = 0.012$, neurological disorder; $P = 0.049$). However, following guideline for tube feeding did not affect the decision making of tube feeding for these disorders (data not shown). We also asked about the life expectancy of the patient after PEG placement, and 79.5% answered that at least more than 12 weeks were expected.

Next, we asked how many interventions they carried out for swallowing disorder before tube feeding. The mean number of interventions was 6.22, and geriatricians with less than 30 years of experience carried out significantly more interventions than those with more than 30 years (6.49 ± 3.2 vs 5.86 ± 2.8 , $P = 0.015$). The number of interventions was not significantly different between geriatricians working in an acute hospital and those working in a clinic. Among 15 items of interventions for swallowing disorder, over 70% of geriatricians answered that "thickening agent" and "using semi-solid and liquid foods" were afforded to patients with swallowing disorder.

Figure 1 shows the percentage of geriatricians organizing a multidisciplinary conference for tube feeding. A total of 63% of geriatricians discussed with other health-care professionals every time or occasionally. They also answered that physicians including themselves (95.4%), primary nurses (84.9%), dieticians (49.7%) and speech therapists (42.0%) were the

members of the conference. The place of employment was not associated with the number of conference members (Table 3).

Table 4 shows the multiple logistic regression analysis for the frequencies and conference members according to the indication for tube feeding and interventions for dysphagia before tube feeding. More "interventions for dysphagia before introducing tube feeding" were carried out in geriatricians organizing a multidisciplinary team conference than the reference group after multivariate adjustment (odds ratio 2.1–8.7). We also found that geriatricians who always organize a conference with many types of health-care professionals (multidisciplinary) carried out more tests for the assessment of swallowing function and interventions for dysphagia before introducing tube feeding, such as oral ice massage, than the reference group. However, the indications for tube feeding were not affected by a multidisciplinary conference.

Discussion

In the present study, we found that approximately 70 % of board-certified geriatricians did not use any guidelines for tube feeding in their practice. We also noted that the use of guidelines was not associated with the decision making for tube feeding in the elderly, because "Guideline of Parenteral and EN in Japan" or "Guideline of PEG in Japan" does not describe the indications for tube feeding in elderly patients, especially in dementia patients.^{15,16} Furthermore, more than half of the geriatricians consider that the purpose of tube feeding is to improve the general condition or to prevent complications in the elderly with eating problems. In contrast, only a few geriatricians selected living will or patient satisfaction. Decision making of geriatricians for tube feeding did not seem to be related to their working place or clinical experiences. Although the guideline describes that "respecting the wishes of the family or living will of the patient when nutrition therapy is needed for the elderly at the terminal stage or with dementia,"¹⁵ most geriatricians who decide the indication of tube feeding might not have a chance to care for patients' living will. Although there is an ideal description in the guideline, it might be difficult for doctors to obtain a patient's living will beforehand, even if they understand the importance of respecting the living will of the patient. Therefore, comprehensive approaches not only from the field of nutrition and gastroenterology, but also from the experience and know-how from the professionals involved in medicine, nursing and care for the elderly, such as geriatricians, nurses, speech therapists, caregivers and care managers, would be expected to make a new guideline for tube feeding in the elderly.

Several studies have shown that there is no survival benefit in dementia patients who receive artificial